Does usage shape grammar? A usage-based study of the inflected infinitive in Brazilian Portuguese

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In light of the usage-based approach (Langacker, 1987, 1999; Bybee, 2001, 2006) and the theory of utterance selection proposed by Croft (2000), this study intends to demonstrate that language usage shapes language structure. The linguistic phenomenon investigated is the inflection of the infinitive in Brazilian Portuguese, which for many years has intrigued both grammarians and speakers. Because frequency is correlated to the degree of entrenchment of constructions in speakers’ grammars, the variation in the usage of the inflected infinitive is measured in a corpus of standard written language. The underlying hypothesis is that measuring the frequency of occurrence of the variants in such a corpus can be revealing inasmuch as it can show what prestige speakers consider grammatically correct. Although it may look contradictory to use a written corpus in order to demonstrate that change happens through use, the idea behind this methodological choice is that if a high-frequent usage of “innovations” is attested in a written corpus, it should be symptomatic that changes might have taken place in interaction and now belong to the speakers’ linguistic knowledge. The results reveal a tendency for the inflection in the investigated constructions, suggesting their high degree of entrenchment.

1. Introduction

Traditionally language use has not been the focus of linguistic investigation. Structuralism and generative grammar have given high priority to the langue, claiming that the linguistic system is self-contained and autonomous from other cognitive abilities and social factors (Croft, 2000). Thus phenomena related to the parole such as variation and speech errors have been considered peripheral.

Nevertheless, Bybee (2006b) pointed out that the interest for the parole has increased in the last decades, and that many theoretical approaches have acknowledged that language structure should not be isolated from language use. Bybee mentioned American functionalists, who have also focused their attention on usage, and have demonstrated that the repeated use of structures may result in their conventionalization. Sociolinguistics also puts language use on stage, since it postulates that variation in language is inherent, systematic, and governed by social factors (Weinreich, Labov & Herzog, 1968).

Another approach that takes usage into account is cognitive linguistics, which Langacker (1987, 1999) defined as usage-based. According to this framework, language structure emerges from language use through general cognitive capabilities of the human brain, not because of an endowment exclusively related to language. Seen as symbolic, language represents a human biological adaptation for interactive goals (Tomasello, 2003). According to Tomasello (2008), human language only evolved due to the evolution of social cognitive abilities. As we combine symbols, usage patterns emerge and constitute what is called grammar. In cognitive approaches to language studies the role of experience in both shaping our linguistic knowledge and our concepts is then highly emphasized.

Even though the aforementioned approaches may differ in the way they approach language in use, together they demonstrate the importance of usage in recent linguistic research. It is also important to emphasize that not only has usage been more and more acknowledged in current linguistic research, but also that advances in computational and corpus linguistics have facilitated studies with real data. This means that those interested in capturing the more dynamic nature of language are now able to investigate linguistic phenomena by analyzing existing data, that is, actual utterances, and this is the realm this study belongs to.

Based on a corpus-study to measure variation in use, the aim of this study is to validate the hypothesis that use constantly shapes speakers’ grammars in light of the usage-based approach (Langacker, 1987, 1999; Bybee, 2006a, 2006b, 2010) and the theory of utterance selection proposed by Croft (2000).

2. Usage-based model

Coined by Langacker (1987), the term usage-based model refers to a nonreductive approach that acknowledges the linguistic system as a collection of both rules and actual occurring expressions rich in semantic, phonological and symbolic details. The system comprises then not only “the schemas that emerge spring from the soil of actual usage” (Langacker, 1999, p. 92), but also instances of very specific occurrences of use, in a storage of redundant information.

Anais do V Congresso Linguística e Cognição
p. 57-63
According to Langacker (1987), a language is a “structured inventory of conventional linguistic units” (p. 494). To understand how this inventory is structured, it is important to consider that in actual instances of language use, referred to by Langacker as usage events, the language user has to relate his linguistic system to these events. Either in order to produce an utterance with an intended meaning or to interpret someone else’s utterance, the language user establishes a connection between the usage event and his inventory, trying to find a similar structure. In case a compatible structure is found, the schema instantiated in the utterance is taken to be conventional. When a good match is not possible, the schema instantiated is considered non-conventional. Through actual language use, novel structures may become part of the system. That is, the concrete use of language structures in the daily life of a speech community is crucial for the emergence of new patterns in the system.

As for the storage of such novel structures, Langacker explained that when a non-conventional structure gets into the system, it may become be reinforced by frequent use or disappear due to non-use. What is crucial in this process is the cognitive ability of habit formation, which Langacker refers to as entrenchment: the more frequent an element is, the more entrenched it becomes. Not only does the frequency of occurrence of an element (token frequency) but also the frequency of a pattern (type frequency) affect speakers’ linguistic knowledge and play a role in the characterization of a structure as being conventional.

Despite the apparent chaos that seems to be present in the dynamic process of language use causing instability in the system, constantly unbalanced by emergence of novel structures, it is undeniable that language is stable to a great extent. Such stability, referred to as convention in this framework, is what allows communication and all the other socio-interactive goals involved in language use to be achieved. With respect to convention and individual linguistic knowledge, Croft (2000) asserted that:

A language is a population of utterances, the result of the employment of linguistic conventions in a speech community. The linguistic system is the result of how a speaker has consolidated the uses of language in which she has participated into her knowledge of the conventions of the speech community. Each speaker’s systematic knowledge of her language is different, because of differences in the range of language use to which each speaker is exposed (Croft, to appear).

Because language is continuously changing, Langacker’s proposal sees it a complex system. Despite the fact that we usually say that languages change, Croft (2000, p. 4) highlighted that “languages don’t change, but people change language through their actions” (emphasis mine). Language should then been seen as a complex system in which all its users are constantly re-structuring it.

Even though Langacker recognized the role of use in the shaping of linguistic structure, his work has not discussed interaction in detail. Croft (2000), on the other hand, proposed a usage-based theory for language change that is directly connected to theories of language use such as Clark’s (Clark, 1996). According to Clark, language use is as a joint action in which both speaker and hearer share some goal, so the function of language should not be reduced to communication but should be seen as a means for some other extralinguistic goals to be achieved: “two people have a coordinating problem whenever they have common interests, or goals, and each person’s actions depend on the actions of the other” (Clark, 1996, p. 62). Hence, the notion of coordination is essential in a theory of language in use.

A prerequisite for coordination is that speakers share some knowledge. This mutual knowledge is what Clark called common ground, and it can be personal or communal. While personal common ground is a result of our daily and intimate interactions, communal common ground is related to community membership.

One of the coordination devices we use in order to accomplish our goals is convention, defined by Clark (1996, p. 71) as:

(i) a regularity in behavior
(ii) partly arbitrary
(iii) that is common ground in a given community
(iv) as a coordination device
(v) for a recurrent coordination problem

Croft (2000) explained that the community in which the convention exists is part of the definition of convention, and suggests a semiotic triangle to define it: form-meaning-community.

In presenting his theory of utterance selection, which is based on Hull’s generalized theory of selection (Hull, 1988 in Croft, 2000), Croft (2000) proposed that language change is an evolutionary process, which is a model of change by replication. In his model, the replicator is a token of linguistic structure, which he calls a lingueme; the interactor is the speaker who replicates linguemes in interacting with other speakers; the population is a speech community, that is, a population of interactors; and the environment is the social context of the speech event, its goals as well as the other members of the population.

According to Croft, replication of linguemes in utterances is fundamentally a cognitive process, mediated by activation of some mental structure and articulatory motor routine. (This mental structure/mental routine is of course acquired from exposure to prior occurrences of the linguemes in language use.) And replication of linguemes is equally fundamentally a social process, mediated by the speaker in
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Based on the hypothesis that language change emerges from language use, the author claims that linguistic convention is central to the process of change. While interacting, when speakers are conforming to convention, they are doing what Croft called normal replication. However, even though speakers try to conform to convention, they often end up violating it by using non-conventional devices. Such non-conformity to convention is called altered replication, and is the first step to change - innovation. Once variation is generated through altered replication, different variants are made available for speakers to use, so they need to select among them. This selection is called differential replication. Croft has argued that language change consists of two steps: innovation and propagation/selection.

As for innovation, Croft declared that “[a]ll language use is innovative, to some degree” (Croft, 2000, p. 104). The pervasive innovation Croft has claimed to be present in language use becomes clear by considering the various ways by which speakers can innovate.

First, even though speakers share common ground, meaning is inherently flexible. Such flexibility in meaning facilitates misunderstandings and therefore unconventional uses in interactions.

Secondly, there is a lot of interpersonal difference when it comes to convention. The fact that members of the same speech community have different understandings in regard to convention facilitates altered replication. Even though convention is stable, and that is why it is an effective coordination device, it is not static. Not only is convention always changing (Croft, 2000, p. 132), but also the notion of grammaticality itself is gradient, according to Bybee (2010). Bybee (2006a, 2006b) claimed that increase in token and type frequency may influence speakers in such a way that the most frequent variant of a particular linguistic phenomenon gradually ends up sounding more correct.

There are also different speech communities that interact and overlap, which potentially facilitates change if we assume there are certainly different conventional uses in each of them.

Because all the innovation opportunities are related to meaning expression through grammar, Croft’s theory should be understood in terms of form and meaning reanalysis.

After innovations occur, they might be propagated or not. When propagation (or selection) takes place, it means a new convention is established. As defended by Croft (2000), propagation is a social process, since it occurs according to the social values assigned to the variants, such as prestige, for example. However, in order to perpetuate, the cognitive structures on which linguistic utterances depend need to be entrenched in the speaker’s grammar, as Croft (2000) explained:

The survival or death of cognitive structures depends on their degree of entrenchment in the mind (…) The shift in proportions of the variants of a linguistic variable in usage is brought about by shifts in degrees of entrenchment of those variants in the grammars of the speakers. This shift is a result of the social value of those variants for individual speakers, but the global effect is an adjustment of their activation value, or a shift in their entrenchment, in a speaker’s grammar (p. 32).

The correlation between the degree of entrenchment and the social values assigned to linguistic variants in guiding language change seems the most appropriate way of approaching the issue. However, it is important to review some of the mechanisms that have been proposed to account for change in order to have a broad picture of different positions on the issue.

2.1. Overview of the causal mechanisms proposed

Among the mechanisms proposed for language change are those called teleological, which can be considered system-based. They are related to changes that occur for the sake of changing or preserving the system itself. Examples of teleological mechanisms are homonymy avoidance, or symmetry preservation, as proposed by Martinet (1952 in Croft, 2000), for example.

Croft (2000) argued against this kind of mechanisms noting that “there is a relatively high tolerance of homonymy, allomorphy and asymmetry in linguistic systems” (p. 68). Thus empirical evidence goes against teleological proposals. As for homonymy avoidance, Croft objected to its teleological nature by claiming that another way of looking at it is to propose that speakers are rather trying to avoid misunderstandings, which would reveal an intentional mechanism at work.


Table 1. Mechanisms of change (Croft, 2000, p. 79)

<table>
<thead>
<tr>
<th>Normal replication</th>
<th>Teleological</th>
<th>Intentional</th>
<th>Nonintentional</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>Convention (being understood)</td>
<td>Entrenchment</td>
</tr>
<tr>
<td>Selection</td>
<td>-</td>
<td>Accommodation</td>
<td>Change in entrenchment</td>
</tr>
<tr>
<td>Altered replication</td>
<td>[preserve distinctions]</td>
<td>Expressiveness</td>
<td>Over/undershoot</td>
</tr>
<tr>
<td></td>
<td>[preserve asymmetry/ gap filling]</td>
<td>Not being misunderstood</td>
<td>Hypercorrection</td>
</tr>
<tr>
<td></td>
<td>[preserve isomorphism]</td>
<td>Economy</td>
<td>Hypocorrection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form-function reanalysis</td>
</tr>
</tbody>
</table>

Taken from Croft (2000), Table 1 provides an overview of the types of causal mechanisms claimed to be involved in language change. Croft pointed out that intentional and non-intentional mechanisms are more appropriate to explain language change, and uses square brackets to indicate the mechanisms he argues against.

Baxter et al. (2009) summarized the mechanisms of selection relating them to the evolutionary model for language change in the following way:

(A) REPLICATOR SELECTION: The choice of the replicator depends on the social value assigned to the variant. Prestige can be included here since in some cases speakers tend to choose variants that are associated with speakers in higher socioeconomic classes.

(B) WEIGHTED INTERACTOR SELECTION: The propagation of the variants depends on the social value associated with the interactor.

(C) DRIFT: Propagation depends on the token frequency of the variant, that it, the more frequent, the more likely it is to be propagated.

(D) NEUTRAL INTERACTOR SELECTION: According to the social network structure, members of the speech community interact with some members more often than they do with others, and as a result they are exposed to different token frequencies of the variants. No social values are involved.

Some researchers such as Trudgill (2004, in Baxter et al., 2009), for instance, have proposed that DRIFT and NEUTRAL INTERACTOR SELECTION are enough to explain propagation. However, postulating that frequency alone is responsible for the propagation of the new forms places the responsibility for change merely on shifts in frequency, either because of the token frequency of the variants themselves or because of the frequency of interaction among speakers using the variants. This is problematic because an innovative use begins with low frequency while the conventional use is much more frequent. So the question that needs to be addressed is: how does a novel schema become more entrenched than the originally conventionalized use in a way that it eventually becomes the conventional use?¹ There may be other factors involved, and as Baxter et al. (2009) suggested, all four mechanisms may play a role in selection.

The view taken in this study assumes that social values may have to be assigned to variants. Therefore, it aligns itself with Baxter et al.’s proposal that all four selection mechanisms are present in language change.

In order to contribute to the investigation of how these selection mechanisms might operate in a possible case of language change, this study focuses on an actual case of language variation. The investigated phenomenon is the inflected infinitive in Brazilian Portuguese, considered by many as simply an instance of hypercorrect usage: the inflection of the infinitive in contexts either considered optional by normative grammar or not mentioned by grammarians.¹¹ I now turn to the presentation of the inflected infinitive, and to the illustration of the so-called problematic constructions.

3. The inflected infinitive in Brazilian Portuguese

The inflected infinitive is an infinitive form with verbal inflection that exists in Portuguese² and that has long intrigued grammarians and speakers, including those considered “prestige speakers”. For this reason, it has been considered one of the most controversial phenomena in the Portuguese syntax by Cunha and Cintra (2008), who pointed

¹ I would like to thank Prof. William Croft (p.c.) for bringing this question to my attention.
² It is also present in some other minor Romance languages such as Sardinian, Old Naepolitan, Old Leonese and Mirandese (Scida, 2004).
out that despite the many attempts to propose rules that could orient the correct choice between the inflected or uninflected forms, nearly all of them seem to be either insufficient, or not to correspond to reality. They acknowledge that there may be influence of factors such as style, emphasis on the subject, rhythm, clarity or desire to avoid ambiguity, but suggest that it is more correct to talk about tendencies instead of rules.

The focus of this study is thus on some of the intriguing cases of the inflected infinitive. Hence, the contexts where the inflection is considered optional - CONSTRUCTION REFLEXIVL+INF (1), as well as a construction that is not exactly mentioned by grammars - CONSTRUCTION PASSIVE ADJECTIVAL COMPLEMENT (2):

(1) “Usamos o termo esquema de conhecimento PARA NOS REFERIRMOS...” (LLIC-PósLetrasUsp)

(2) “... Condições típicas DIFÍCEIS DE SEREM encontradas em outros ambientes.” (LLIC-PósLetrasUsp)

The data show a tendency for the inflection in such contexts, which would suggest that the inflection is moving towards conventionalization. However, frequency studies are undoubtedly necessary to corroborate this hypothesis. Because usage-based linguistics assumes that there is a correlation between the type and token frequencies of linguistic expressions and the degree of their cognitive entrenchment, dealing with real data and quantifying the variation may shed light on the ongoing fluctuations in linguistic conventions.

4. Corpus and methods

The corpus, named LLIC-PósLetrasUsp, consists of 180 theses and dissertations downloaded from the data bank the University of São Paulo makes available online. The texts were randomly chosen, and the only aspect that was controlled was the number of texts from each area to guarantee the balance and representativeness of the corpus.

Table 2. Design of the corpus

<table>
<thead>
<tr>
<th>Areas</th>
<th>Number of texts</th>
<th>Number of words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portuguese Literature</td>
<td>30</td>
<td>1,675,619</td>
</tr>
<tr>
<td>Semiotics and Linguistics</td>
<td>30</td>
<td>1,370,015</td>
</tr>
<tr>
<td>Philology and Portuguese</td>
<td>30</td>
<td>1,913,000</td>
</tr>
<tr>
<td>Classical Studies</td>
<td>30</td>
<td>2,516,889</td>
</tr>
<tr>
<td>Jewish, Russian, Japanese and Arabic Studies</td>
<td>30</td>
<td>1,670,403</td>
</tr>
<tr>
<td>French</td>
<td>30</td>
<td>2,023,399</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>180</strong></td>
<td><strong>11,169,325</strong></td>
</tr>
</tbody>
</table>

The written productions of graduate students in those areas were chosen because they are considered prestige speakers, and also because they are language students. Investigating their use of the inflected infinitive in Portuguese, no matter how different it is from what is prescribed, was expected to be revealing inasmuch as it would show what prestige speakers consider grammatically correct. Although it may look contradictory to use a written corpus in order to demonstrate that change happens through use, attesting a high-frequent usage of “innovations” in a written corpus should be interpreted as a symptom that changes might have taken place in interaction and now belong to the speakers’ linguistic knowledge.

Even though there is a large electronic corpus of Portuguese named NILC-São Carlos, it was necessary to compile a corpus due to the specific interest in current written standard Portuguese. By using a corpus such as NILC, one has no control as for who wrote the text. That means that simply verifying a high token frequency would not be useful. On the one hand, it might validate the hypothesis that the inflection is entrenched in many infinitive constructions. On the other hand, the result would be vague in that it would not specify what prestige speakers are using, which is the main focus of this research.

4.1 Operationalizing the data

The corpus LLIC-PósLetrasUsp has more than 11 million words, so the search for the constructions under investigation is untenable by hand. To handle the data in an automatic fashion, I chose to use the software R, which has been considered a powerful tool. Widely used in hard sciences, it has been successfully used in quantitative corpus linguistics, as discussed in Gries (2009).

The endeavor of going through the process of learning how to deal with a programming language instead of simply using one of the available ready-made software applications is undeniable a whole new world for a linguist with no prior programming knowledge, as was my case. However, after the first results were obtained, the challenge proved to be fruitful and therefore worth it.

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3 LLIC- Lab ‘Language, interaction and cognition’ is a research group of the Graduate Program in Linguistics at the University of São Paulo.
5. Results

As Table 3 shows, in 72% of the instances of the constructions \texttt{REFL.1PL+INF} the infinitive was inflected. Similarly, the inflection of the infinitive in the construction \texttt{PASSIVE ADJECTIVAL COMPLEMENT} was also more frequent than the non-inflection: Table 4 shows that 91% of the instances of the constructions had an inflected infinitive as a complement.

### Table 3

<table>
<thead>
<tr>
<th>CONSTRUCTION \texttt{REFL.1PL+INF}\textsuperscript{4}</th>
<th>TOKENS</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninflected (see example 3)</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>Inflected (see example 4)</td>
<td>31</td>
<td>72</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>43</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

(3) “... precisamos pensar na língua PARA NOS COMUNICAR adequadamente.” (LLIC-PósLetrasUsp)

(4) “... usamos errors PARA NOS REFERIRMOS a quaisquer desvios provenientes das realizações...” (LLIC-PósLetrasUsp)

### Table 4

<table>
<thead>
<tr>
<th>CONSTRUCTION - PASSIVE ADJECTIVAL COMPLEMENT</th>
<th>TOKENS</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninflected (see example 5)</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Inflected (see example 6)</td>
<td>78</td>
<td>91</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>86</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

(5) “... diferenças que são SUTIS E DIFÍCEIS DE SER determinadas.” (LLIC-PósLetrasUsp)

(6) “... Condições típicas DIFÍCEIS DE SEREM encontradas em outros ambientes.” (LLIC-PósLetrasUsp)

These results demonstrate a high-frequent use of the inflection in the two investigated infinitive constructions, showing the high degree of entrenchment if inflected infinitive in speakers’ grammars. This fact should be interpreted as evidence that changes might have taken place in interaction: the high-frequent use of a particular variant in written language interestingly suggests that such variant is now taken to be conventional, even though it might differ from what is prescribed.

6. Conclusions

For usage-based approaches to language, grammar is not a fixed organization but emerges from the concrete use of language structures in the daily life of a speech community. Both the frequency of occurrence of an element (token frequency) and the frequency of a pattern (type frequency) affect speakers’ linguistic knowledge through the application of cognitive abilities such as schematization, categorization and habit formation (or entrenchment). Thus, token and type frequencies are therefore crucial for categorization, storage and emergence of new patterns in language.

The hypothesis was that measuring the frequency of occurrence of the variants in a corpus of standard written language could be revealing inasmuch as it would show what prestige speakers consider grammatically correct. The methodological choice of using a written corpus in order to demonstrate that change happens through use, had the objective of showing that changes which might have taken place in interaction now belong to the speakers’ linguistic knowledge.

The results suggest a tendency toward the inflection in the investigated constructions, demonstrating the inflected infinitive is entrenched in the speakers’ grammars. This should be interpreted as evidence that changes might have taken place in Brazilian Portuguese. However, it is still too soon to confidently determine which mechanisms of change might have been involved. In order to shed more light on the topic, further research needs to be conducted, mainly research involving spoken data as well as other constructions in which the inflected infinitive is used.

### References


\textsuperscript{4} These results correspond to a sample of 10% of the corpus, that is, about 1 million words.
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