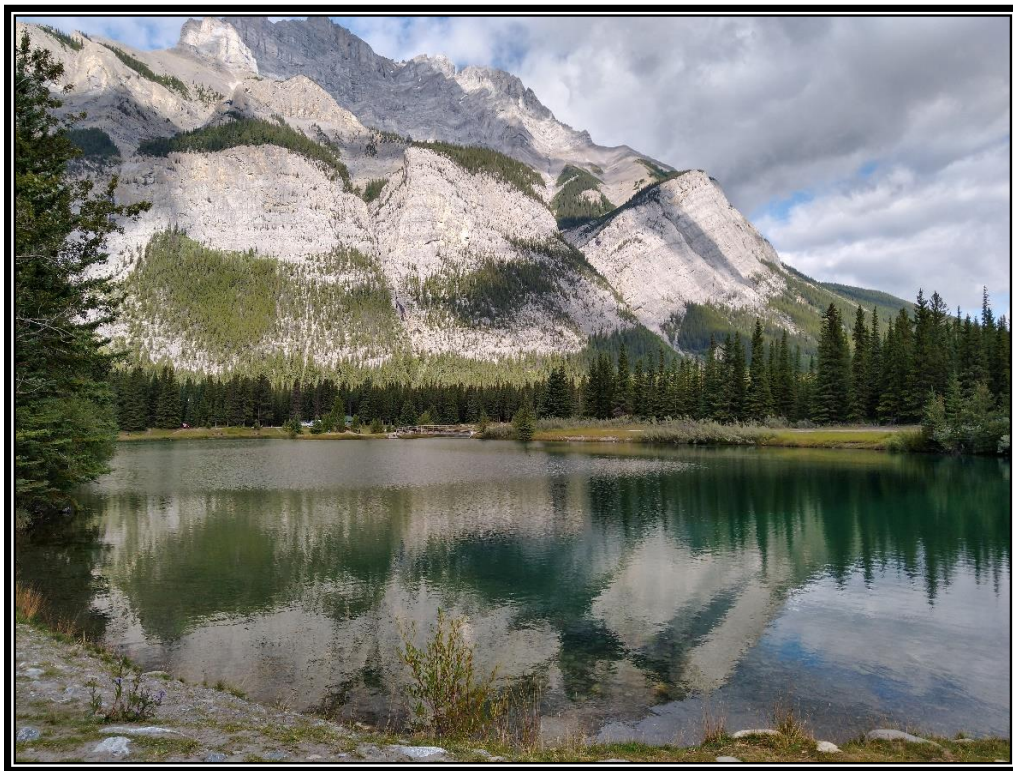




ISSN 2371-2643

CALGARY WORKING PAPERS IN LINGUISTICS

Volume 32, Spring 2022



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Foreword

We, the editors, are pleased to present the thirty-second volume of the Calgary Working Papers in Linguistics (CWPL). CWPL is a publication affiliated with the School of Languages, Linguistics, Literatures and Cultures (SLLLC) at the University of Calgary, focusing on recent and ongoing work in linguistics and related disciplines by researchers affiliated with the University of Calgary. This and all previous volumes of CWPL since Volume 1 (originally published in print in 1975) are digitally stored in PRISM: The University of Calgary Digital Repository and can be accessed at: <http://dspace.ucalgary.ca/handle/1880/>.

Before further discussing the papers in this volume, we would like to take this opportunity to acknowledge that the University of Calgary and city of Calgary, called *Mohkinstsis* in Blackfoot, exists within the traditional territories of the people of the Treaty 7 region in Southern Alberta, which includes the Blackfoot Confederacy (comprising the Siksika, Piikani, and Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda (including the Chiniki, Bearspaw, and Wesley First Nations). The city of Calgary is also home to members of Métis Nation of Alberta, Region 3.

Each paper submitted to Volume 32 has been reviewed and edited by two editors, all graduate students of linguistics at the University of Calgary. It should be noted that the papers published in CWPL represent works in progress and should not be considered as final or definitive papers. Therefore, publication in CWPL does not preclude submission of further revisions of the same papers to another journal or publication.

Volume 32 contains three papers from both undergraduate and graduate students at the SLLLC. These papers explore topics in phonology, dialectology, nominal syntax, and particle syntax. The languages featured in this volume include Spanish and Mandarin Chinese.

Finally, we thank and express our most sincere gratitude to all contributors, editors, and advisors and supervisors of those contributors and editors for their time, effort, and patience in their participation in the editing and publishing process of this volume. This continuation of CWPL's longstanding tradition at the University of Calgary would be impossible without you and your work.

Editors of CWPL – Vol. 32

BrettC Nelson
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March 2022

Approaches to coda /s/ in Ecuadorian Spanish

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Abstract

Ecuadorian Spanish displays significant regional variation affecting the realization of coda /s/. Within the highlands of Ecuador, the pronunciation of coda /s/ as [z] occupies different phonological environments depending on the subregion: While in the far north and south [z] is only found preceding voiced consonants, central and central-southern varieties display [z] in more environments, namely word-final prevocalic and prefix-final environments, which makes them unique in the Spanish-speaking world. In this investigation, I review the main studies that have focused on the description and analysis of coda /s/ voicing in Ecuadorian Spanish (Lipski, 1989 and Bradley & Delforge, 2006) and combine their insights with those of other studies (Muñiz Cachón & Cuevas Alonso, 2012, Navarro Tomás, 1968) which have explored the sonority of preconsonantal /s/. Stemming from this exploration, I present a conciliatory solution to the problem of /s/-voicing. I modify Lipski's formal analysis to include a voice-neutral [S] that appears in pre-consonantal position, which resonates with the findings by Muñiz Cachón and Cuevas Alonso (2012) and the observations by Navarro Tomás (1968), both of which show that pre-consonantal /s/ in Spanish has gradient voicing.

Key words: Ecuadorian Spanish, /s/-voicing, phonology, dialectology

1. Introduction

Ecuador is a region of interest for Spanish dialectology due to its regional variation affecting phonology. Although the most significant dialect division lies in the border between the coast and the highlands, the highlands display an internal variation with regard to coda /s/ that merits close attention. Understanding highland Ecuadorian as a dialect with conservative or “highland” phonology¹, the sound [z] is expected to be found as an allophone of /s/ in the environment preceding voiced consonants. However, central and central-southern varieties of highland Ecuadorian Spanish display [z] in more environments, namely word-final prevocalic and prefix-final environments, which makes them unique in the Spanish-speaking world. The main focus of this investigation is the presence of the sound [z] with varying environmental restrictions across highland varieties. I will review the available literature that has focused on the description and analysis of coda /s/ voicing in Ecuadorian Spanish (Lipski, 1989 and Bradley & Delforge, 2006), gather their insights and combine them with those of other authors (Muñiz Cachón & Cuevas Alonso, 2012; Navarro Tomás, 1968) who have explored the sonority of preconsonantal /s/, to produce a more conciliatory solution to the problem of /s/-voicing.

2. Dialect variation

There is a high degree of dialect variation in Ecuador in relation to the small size of the country. The most striking division is between the coastal and highland regions, with the coastal dialect bearing a lot of similarity to Caribbean and other lowland dialects², and the highland dialect displaying a more conservative (or “highland”) phonology similar to that of western Bolivia and central Mexico. There is, nonetheless, well-defined variation affecting the production of coda /s/ within highland Ecuadorian Spanish, identifiable by the voicing of coda /s/ in certain positions. The characteristics of coda /s/ pertaining to each dialect area are listed in the next table, based on Lipski (1996):

¹ The classification of dialects into “lowland” and “highland” was defended by Ureña (1921) (as cited in Rosenblat, 1965), and is based on the hypothesis that colonists from Andalusia were predominant in coastal and lowland areas, which they preferred due to environmental affinity to their homeland, while colonists from the interior of Spain preferred the higher regions to settle. The result of such distribution of settlers was that phonologically innovative traits characteristic of Andalusia such as s-aspiration and merger of liquids became characteristic of coasts and lowlands in Latin America.

²Same as footnote (1).

Table 1: Pronunciation of coda /s/ in four dialect areas of Ecuador

Coast	Coda /s/ is generally [h], and deleted utterance-finally: s→h/σ, s→∅/_# . (where “.” means end of utterance). As in ‘los lobos’: lo[h]lobo
Carchi and Loja provinces	Coda /s/ is [s] except before voiced consonants: s→z/_C[+voi] As in ‘rasgos andinos’: ra[z]go[s]andino[s]
Central Ecuador	Coda /s/ is pronounced [z] before a voiced consonant, and word-finally before a vowel, and [s] elsewhere: s→z/_#V, _C[+voi] As in ‘rasgos andinos’: ra[z]go[z]andino[s]
Azuay and Cañar provinces	Coda /s/ is pronounced [z] before a voiced consonant, word-finally before a vowel, and at the end of a prefix inside a word: s→z/[prefix_]V, _#V, _C[+voi] As in ‘desechar’: de[z]echar

The Amazon has been omitted from this list because, according to Lipski (1996, p. 267), it does not display a stable local dialect of Spanish, as its population speaks Indigenous languages.

In this research, I will focus on areas 3 and 4, due to their special treatment of coda /s/, which is unique in the Spanish-speaking world and deserves a close analysis.

3. History of /s/-voicing

Highland Ecuadorian Spanish of areas 3 and 4 is unique in its conservation of a voicing distinction between [s] and [z], whose origin can be traced to medieval Spanish. In most Spanish dialects, /s/ is only voiced before a voiced consonant, while in Ecuador the sound [z] appears intervocally.

Based on previous research of my own (Giudice Grillo, 2020), with Menéndez Pidal (1968), Lathrop (1984), and Loporcaro (2011) as resources, medieval Spanish had the following (Table 2) inventory of sibilants and of affricates that would later become sibilants:

Table 2: Medieval Spanish sibilant system

Voiceless	Voiced
/s/ as in <i>passar</i> ‘to pass’	/z/ as in <i>casa</i> ‘house’
/ts/ as in <i>çielo</i> ‘sky’	/dz/ as in <i>vezino</i> ‘neighbour’
/ʃ/ as in <i>caxa</i> ‘box’	/ʒ/ as in <i>fijo</i> ‘son’

After a process of deaffrication, the inventory was the following, with affricates becoming dentalized fricatives:

Table 3: Spanish sibilant system after deaffrication

Voiceless	Voiced
/s/	/z/
/s̺/	/z̺/
/ʃ/	/ʒ/

This inventory lost the three voiced phonemes toward the 14th century in the northern half of Spain, and the loss spread southward no earlier than the 16th (as can be verified in Fray Juan de Córdoba's *Arte de la lengua zapoteca* (1578) where he says that "those from Old Castile say *hacer* and in Toledo *hazer*, they say *xugar* and in Toledo *jugar*" – cited by Lincoln Canfield, 1981). Ultimately, the three-phoneme inventory became reduced to a two-phoneme inventory with /s/ as the single alveolar sibilant in southern Spain, a system termed *seseo* (non-distinction of alveolar sibilants). People from southern Spain constituted the most important group of settlers in the American continent according to studies by Boyd-Bowman (as reported in Vaquero, 1996, p. 51), and that is thought to be the reason why all of Spanish-speaking America is *seseante*. The only remnant of the intervocalic (word-internal) voicing distinction is found in a few municipalities of the province of Cáceres in Spain whose dialect is described in Menéndez Pidal's *Manual de Gramática Histórica Española* (1968, p. 116). We would be led to think that the merger of alveolar sibilants in the Spanish that was brought to the Americas was total, as it is in almost all Spanish dialects today, where there is no intervocalic voicing of /s/. However, in Ecuadorian Quichua there are minimal pairs, such as /misa/ 'mass' and /miza/ 'table' (Robinson, 1979, p. 138) that testify in favour of there having been a phoneme /z/ in the phonological inventory of the Spanish brought to the region in the 16th century. This points to the likelihood that the phoneme /z/ and the phenomenon of *liaison* voicing (word-final prevocalic voicing) of /s/ remained widespread in Spain in the 16th century, and possibly in areas of Spain where *seseo* had become dominant. That is to say, *seseo* was likely not total in some regions, and while the contrast between plain alveolar and dentalized alveolar sibilants was lost, the voicing distinction would have remained for some time, until disappearing in later centuries.

Bradley and Delforge (2006) draw on the comparative argument based on the voicing pattern of alveolar sibilants in Portuguese and Judeo-Spanish, to affirm that medieval Spanish must have displayed the same pattern. For example, Portuguese *asas inúteis* 'useless wings' is pronounced *asa[z] inutei[ʃ]*, and in Judaeo-Spanish "*more or less*" is *ma[z] o meno[s]*. And Penny (1991) said "since the medieval Castilian sibilant subsystem was similar in other regards [...] to that of Catalan, Portuguese, and Judeo-Spanish, it is likely that the similarity extended to having voiced word-final sibilants before a word-initial vowel." (Penny, 1991, p. 80-81).

It is not possible to know to what extent voicing of the type of central Ecuador (*liaison* voicing) was widespread in the Spanish-speaking world in previous centuries, but we can make the conjecture that it was present in more places than just Ecuador, at least in the initial stage of colonization when Spanish arrived. We could even propose, based on the evidence from Quichua (the *misa/miza* pair), that a variety of Spanish that still carried /z/ in its contrastive inventory was brought to Ecuador by colonists, and therefore that the retention

of the voicing contrast of alveolar sibilants was significantly more widespread in Spain in the 16th century than it is today.

4. Lipski, Bradley and Delforge, and Robinson

In this section I will review three approaches that address the phonetic value of [z] in Ecuadorian phonology: Lipski (1989), Bradley and Delforge (2006), and Robinson (1979).

4.1. On the non-phonemic status of [z]

It is evident that the voicing contrast of the alveolar sibilant is important for word identification in highland Ecuadorian, but we must discard the idea that /z/ is a phoneme in Ecuador. This position is defended by all authors cited in this research.

Second language acquisition provides evidence of the non-phonemic value of [z]. Robinson (1979) made it clear that “it would be difficult to reconcile an analysis of the /s/ of *desastre* as being /z/ with the fact that the residents of Cuenca have as much difficulty as other Spanish-speakers in mastering the English /z/-/s/ opposition” (Robinson, 1979, p. 141).

4.2. Lipski (1989)

John Lipski makes an extensive analysis of /s/-voicing in Ecuadorian Spanish in his article “/s/-Voicing in Ecuadorian Spanish” (1989), where, abiding by the view that [z] is not a phoneme, he resorts to phonological cycles and to syllabification to explain the voicing and devoicing processes that the alveolar sibilant undergoes.

According to Lipski, there is a special relationship between preconsonantal voicing and prevocalic voicing in that they are both syllable-final. Lipski proposes that the process is actually a phonetic devoicing of an already voiced /s/. This means there is a step at which coda /s/ is voiced, early in the derivation. The challenge with this approach is finding the order in which rules apply: Word-final prevocalic voicing seems to apply at least before resyllabification. The initial phoneme is /s/ but through a process it becomes voiced before resyllabification, and is finally devoiced in some phonetic environments (utterance-finally and before voiceless consonants). To solve this problem theoretically, Lipski first resorts to rule ordering and to the lexical cycle (Steriade, 2016, p. 143), applying cycles of syllabification: The first cycle corresponds to word-initial and word-internal /s/, such as in *saco* ‘coat’ and *casa* ‘house’, which is assigned underlyingly as /s/ (Lipski, 1989, p. 52-53), and the last cycle (post-cyclic) corresponds to coda /s/ and prefix-final /s/ (in Cañar and Azuay), such as in *lo[z] amigos* ‘the friends’ and *de[z]empeño* ‘performance’; it is understood from this that post-cyclic resyllabification does not affect voicing. He further says that there are three “degrees” of coda-s syllabification in non-aspirating Spanish dialects: the first corresponds to most non-aspirating dialects of Spanish, where “voicing is assigned last-cyclically as [+voice] in syllable codas before a C-slot specified as [+voice], and as [-voice] elsewhere”, the second corresponds to central Ecuadorian, where voicing is assigned “last-cyclically as [+voice] in syllable codas before any slot on the CV tier specified as [+voice], and as [-voice] elsewhere”, and the third corresponds to the Cuenca dialect (Cañar and Azuay),

where voicing is assigned at the lexical cycle as “+voice in syllable codas before any slot on the CV tier specified as +voice, and as -voice elsewhere.” (Lipski, 1989, p. 53). Thus, Lipski argues that prefix-final voicing in the Cañar and Azuay dialect is lexical as opposed to “post-cyclical” as for central Ecuadorian, and he never suggests there to be a contrast between [s] and [z] at the phonemic level.

Lipski gives a formal solution to the issue of coda /s/ voicing by drawing a skeletal tier (a representation of syllabification) that displays a boundary slot for the word boundary and produces [z] as a result of an /s/ in coda position being followed by this boundary slot. In his words, “at the point where syllable-final consonantal modifications apply, Spanish word-final consonants are followed by an unattached slot on the skeletal tier.” (Lipski, 1989, p. 58) In his reasoning, coda /s/ in highland Ecuadorian is not outright resyllabified as onset of the next syllable, as is the case in other dialects, but retains the features of a coda /s/ (voicing in this case) due to the boundary slot. In this view, [z] actually starts out as /s/ at the lexical level, and is voiced by virtue of being in the coda. This is Lipski’s skeletal tier representation:

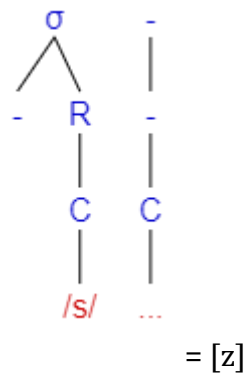


Figure 1: Skeletal tier (Lipski, 1989, p. 59, fig. 8)

Following this, it is evident that Ecuadorian Spanish has different syllabification parameters from standard Spanish, something that is further corroborated by Ecuadorian speakers identifying word-internal pauses in words with the prefix *des-* (Robinson, 1979, p. 141), that is, speakers of the Cañar and Azuay provinces.

4.3. Bradley and Delforge

I now examine the theoretical study done by Bradley and Delforge (2006). In this study, they use an Optimality Theory approach for describing the conditions that favor the distinction between [s], [z], and neutral [S]. Their OT description is the following: They give the two constraints IDENT_{SIB} and *MERGE to ensure that the distinction between [s] and [z] in Ecuadorian Spanish is maintained in the surface.

IDENT_{SIB}(voice) Corresponding input and output sibilants are identical in [voice].

*MERGE No output word has multiple input correspondents.

“*MERGE is crucial in accounting for the voicing of word-final prevocalic sibilants in both medieval and modern Ecuadorian Spanish.” (Bradley & Delforge, 2006). In their analysis, a phonology that merges all intervocalic alveolar sibilant occurrences into /s/ violates both of the constraints stated above.

Bradley and Delforge make an important argument, which is that of the neutrality of preconsonantal /s/, graphed [S]. This is the /s/ that appears in words like /desde/ [dɛzðe]. “Following Steriade (1997) and Ernestus (2003), we distinguish between phonologically contrastive obstruents, specified as either +voice or -voice, and neutral obstruents, which are 0voice.” (Bradley & Delforge, 2006, p. 27). This /s/ “need not be perceived as belonging to either category” (Bradley & Delforge, 2006, p. 27). They say that the length of the sibilant emission is relevant to the voicing of [S] because longer constriction durations result in devoicing for aerodynamic reasons; voiceless fricatives are usually longer than voiced ones, and shorter constrictions tend to favor voicing (Bradley & Delforge, 2006, p. 27).

Bradley and Delforge say that voicing of coda /s/ in prevocalic position “presumably reflects a phonological [+voice] specification” (Bradley & Delforge, 2006, p. 39), but they do not delve into the derivational steps that produce [z] or [S], which is something Lipski did more clearly. They treat the Ecuadorian voicing phenomenon as a (partial) re-emergence of the old Spanish voicing pattern but they do not explain the process by which the pattern allegedly resurges. Nonetheless, they introduce the concept of neutral [S], which I will embrace and attempt to integrate into Lipski’s analysis in the next section.

5. Analysis considering Muñiz Cachón and Cuevas Alonso

We have examined two extensive analyses of coda-s-voicing in highland Ecuadorian Spanish: Lipski (1989) and Bradley and Delforge (2006). The first one contributes an approach based on the cyclic nature of resyllabification and a skeletal tier analysis that defines the derivation of [z] in highland Ecuadorian as resulting from the position of /s/ in the coda followed by a word-boundary or prefix-boundary slot. The second (Bradley & Delforge, 2006) contributes an OT analysis of the voicing contrast, as well as the concept of a voice-neutral [S] which corresponds to preconsonantal coda /s/ in Spanish.

Lipski’s skeletal tier approach is a solid base for understanding the derivation of [z] in dialect areas 3 and 4 (referring to the chart in section 2), but he does not include in his analysis the neutrality of preconsonantal coda /s/. Apart from Bradley and Delforge, the neutrality of this consonant has been supported by Navarro Tomás (1968) and Muñiz Cachón and Cuevas Alonso (2012) for other varieties of Spanish.

Muñiz Cachón and Cuevas Alonso (2012) undertook a phonetic investigation of the Spanish spoken in Asturias, Spain in 2003-2004. They tested the voicing of /s/ in the environment _C[+voice]. For this, they interviewed a sample of twenty university students from central Asturias, ten male and ten female, from which they obtained a total of 4,200 samples of /s/ preceding a voiced consonant (which were /m, n, l, b, d, g, j/, to the exclusion of /ʎ/ due to the full dominance of *yeísmo*³ in the region, and /r/ due to the disappearance or

³ *Yeísmo* is the merger of the phonemes /ʎ/ and /j/, which is present in most Spanish dialects.

rhotacization of /s/ preceding it.). Their parameters considered three possible variants of /s/: voiced, voiceless, and “mixed”. I here present their results, which are separated by gender of the study subject.

Table 4: Proportion of voiced and voiceless realizations of /s/ preceding voiced consonants.

	Voiceless	voiced	mixed
Male	34.81%	63.71%	1.48%
Female	59.09%	39.09%	1.81%
Total	46.95%	51.40%	1.64%

The authors suggest that we should perceive voicelessness of the sibilant before a voiced consonant as a tense pronunciation resulting from a tendency toward more formal speech. They call male speech “less effortful, more lax, which favors [...] the contagion of sonority between neighboring sounds” (Muñiz Cachón & Cuevas Alonso, 2012, p. 298, my translation).

These results, which nearly favored voicelessness in the environments in which voicing is expected for /s/, and which recognized a mixed, half-voiced, half-voiceless sibilant, are suggestive of a much more general trend in Spanish when combined with Navarro Tomás’s assertion that, cross-dialectally, while in normal speech /s/ becomes [z] before voiced consonants, in “slow or strong” articulation it becomes [s] (Navarro Tomás, 1968, p. 108). This naturally leads us to assume that all non-aspirating varieties of Spanish display gradient voicing of preconsonantal /s/, in line with Bradley and Delforge’s claim that this is a voice-neutral [S] in Ecuador.

Taking into account the concept of neutral [S] proposed by Bradley and Delforge (2006), and the results found in Muñiz Cachón and Cuevas Alonso (2012) together with Navarro Tomás’s (1968) assertion, it is sound to assume that preconsonantal /s/ is voice-neutral [S] in highland Ecuador and predict that if a study like Muñiz Cachón and Cuevas Alonso were performed in the region it would yield similar results. However, Lipski’s skeletal tier analysis generalizes the sound [z] for coda /s/ in highland Ecuadorian Spanish, not including voice-neutral [S] in his analysis. It is necessary, therefore, that we modify Lipski’s skeletal tier analysis to make it fit with the contributions from the other authors. I propose the following modification to the skeletal tier analysis: that the [z] produced from contact with the word boundary node is realized as voice-neutral [S] if a consonant (onset node filled with a ‘C’) follows the boundary node, therefore:

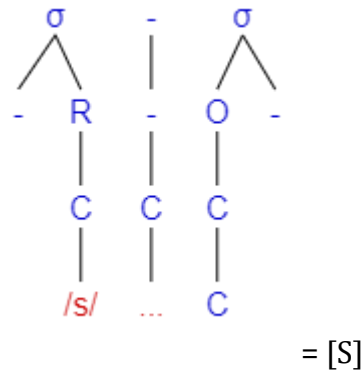


Figure 2: Modified skeletal tier

Nonetheless, the facts from Robinson (1979) and Lipski (1989) which tell us that coda /s/ in highland Ecuadorian, in slow or paused speech tends to be pronounced [z], could pose a challenge to our assertion that voice-neutral [S] exists in central and central-southern Ecuador. For example, Robinson recorded the utterance “es... tres” (‘it’s...uh...three’), pronounced [ez...tres] (1979, p. 141). Therefore, the only way we can confirm the presence of neutral [S] in preconsonantal position in Ecuador is through a phonetic study like Muñiz Cachón and Cuevas Alonso (2012) in dialect regions 3 and 4 (referring to the chart in section 2).

6. Conclusion

In this study we have explored the dialect areas of Ecuador with regard to the realization of coda /s/, the history of s-voicing in Spanish, and various approaches to the phenomenon of coda /s/ voicing. We have seen that there are four dialect areas with regard to coda /s/ in Ecuador, out of which we have focused on two areas that display peculiar voicing phenomena, namely the voicing of prevocalic word-final /s/ and the voicing of prefix-final word-internal /s/. The history of the evolution of Spanish sibilants, and evidence from Spanish borrowings into Ecuadorian Quichua, lead us to propose that /s/ voicing in Ecuador is a phenomenon inherited from the voicing patterns of medieval Spanish, and that this could be revealing of a wider distribution of /s/ voicing in Spanish in the 16th century than what remains today. As for the phonological analysis of coda /s/ voicing in Ecuador, Lipski (1989) and Bradley and Delforge (2006) give us some important insights. The first, Lipski, provides us with a cyclic explanation of resyllabification asserting that highland Ecuadorian has different syllabification parameters than standard Spanish, and he represents the process formally through a skeletal tier analysis that produces [z] from an /s/ followed by a word boundary node. The second approach, Bradley and Delforge, introduces the concept of a voice-neutral [S], corresponding to preconsonantal position, which is very useful for the description of preconsonantal /s/ specially after support from the study by Muñiz Cachón and Cuevas Alonso (2012). My contribution to this investigation of /s/ voicing in Spanish has been to modify Lipski’s skeletal tier analysis in order to make it resonate with Bradley and Delforge’s neutral [S] proposal and the findings by Muñiz Cachón and Cuevas Alonso on the frequent voicelessness of preconsonantal [S], creating a skeletal tier that produces neutral [S] when the word-boundary slot after a coda /s/ is followed by a consonant slot. Further

investigation of the voicing of preconsonantal /s/ in Ecuadorian Spanish is necessary in order to confirm the applicability of this analysis.

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An exploration of neuter determiner 'lo' and 'lo que' constructions in Spanish

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Abstract

This paper presents an exploratory overview of the syntactic properties of 'lo', a polysemic definite determiner that is standardly characterized as having a 'neuter' grammatical gender. I argue that 'lo' is better characterized as a referential pronoun lacking φ features, which refers to non-individuated entities. In addition to this referential 'lo', and following Zulaica Hernandez (2018), I argue that there is a non-referential, expletive 'lo', which relates a possible world to a predicate which may contain morphologically expressed φ features. However, the distribution and referentiality of 'lo' in 'lo que' constructions (prepositional clauses where 'lo' can be external or internal to the CP; see Plann, 1980) indicate that whether 'lo' is referential or expletive is not a matter of syntactic position, contrary to Zulaica Hernandez (2018). Referential 'lo' stands in contrast with most structurally defective pronouns, such as impersonal pronouns and expletives, in that it is a definite pronoun with a specific referent. This goes against the standard assumption that a nominal phrase that has properties associated with 'higher' layers of structure, such as definiteness (associated with DP), must therefore also have 'lower' layers like NumP and nP. Although this paper does not present a solution, it does point out that standard theory cannot account for it and argues for the need to continue developing our understanding of nominal structure.

Keywords: Spanish, neuter 'lo', neuter pronouns, nominal structure, syntax

1. Introduction

Although Spanish has a two-gender grammatical system, there are a number of linguistic objects that have been traditionally classified as neuter, i.e., neither masculine nor feminine. These are: definite determiner *lo*, pronoun *ello*¹ and demonstratives *eso*, *esto* and *aquello* (proximal, medial and distal, respectively). These pronominal-like objects refer to, broadly speaking, ‘non-nominals’ – events, propositions, properties, etc. For example, *lo* in (1) refers to an utterance.

- 1) *Lo que me dijiste me dolió*²
 LO that ACC.1SG said.2SG ACC.1SG hurt.3SG
 ‘What you said to me hurt me’

Lo, in particular, has been the subject of much debate and attention in the Spanish literature for its highly polysemic nature and broad distribution. Although the semantic and syntactic properties of *lo* are by no means under-researched, the majority of this research has centred *lo* in a few specific contexts, while others have been largely ignored.

This paper investigates the semantic and syntactic properties of *lo* by centring what Susan Plann (1980) called *lo que* constructions, a term that encompasses two different types of relative clauses. Specifically, it explores how the *lo* in these constructions presents a challenge to previous typologies of *lo*. At the same time, it investigates how so-called neuter determiners in general, but particularly *lo*, present a challenge to existing conceptions of nominal structure.

The rest of this section introduces *lo que* constructions as they were originally defined by Plann (1980). Section 2 acts as a literature review by exploring the question that has been at the center of *lo* literature, that of its categorization. Section 3 introduces Stark & Pomino’s (2010) historical account of the semantic features of *lo*, and specifically its relationship with φ features, in the context of feature geometry. Section 4 provides an analysis and critique of Zulaica Hernandez (2018), a semantic analysis which differentiates two major types of *lo* linguistic objects based on their referentiality. Section 5 explores why the semantic properties of *lo*, as described in the previous sections, make troublesome predictions on the nature of its nominal structure. Section 6 is the conclusion.

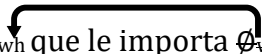
Lo que constructions

Plann (1980) characterized *lo* as a definite article that can only select null ($\emptyset$) neuter nouns. She identified two relative clause constructions, both with the surface string *lo que* at the edge of the relative clause but with different underlying structures. In the bare *lo que* construction, this article (henceforth ‘antecedent *lo*’) is part of the relative clause’s

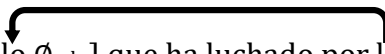
¹ The use of *ello* is considered archaic nowadays, having been replaced by *eso* and by a null pro-form (Zulaica Hernandez, 2018).

² Unless otherwise specified, examples are my own.

antecedent (2a). As diagrammed in (2b), this antecedent is base-generated in the matrix clause, where it selects a null noun modified by the relative clause.

- 2) a. *Luchó por lo_i $\emptyset_i$ que le importa*
 Fought.1SG for LO that ACC.3SG matter.SG
 ‘She fought for what matters to her’
- b. [PP por [NP lo $\emptyset$ [CP $\emptyset_{wh}$ que le importa $\emptyset_{wh}$]]]
- 

In the *P lo que* construction, the article (henceforth ‘wh-internal *lo*’) selects a null wh-word³ within the relative clause, which modifies an antecedent with matching (lack of) φ features (3a). As diagrammed in (3b), *lo* is base-generated within the embedded clause and is pied-piped with the rest of the extended nominal projection to Spec, CP.

- 3) a. ... *Ha conseguido aquello_i por lo_i que ha luchado*
 have.3SG achieved DISTAL.N⁴ for LO that have.3SG fought
 ‘She has achieved that **which** she has fought for.’
- (Retrieved from *Corpus del Español* (Davies, 2004))
- b. [NP aquello [CP [PP por lo $\emptyset_{wh}$] que ha luchado por lo $\emptyset_{wh}$]]]
- 

Plann (1980) was using a Transformational Grammar approach, which posited syntactic movement as a series of transformations between underlying and surface structure. For this reason, the focus of her research is on demonstrating that the ‘antecedent *lo*’ construction has the structure in (4a) and the ‘wh-internal *lo*’ construction has the structure in (4b), as well as on identifying the transformations that result in the surface order. The properties of *lo* in-and-of-itself did not receive much attention.

- 4) a. [NP lo $\emptyset$ [CP que...]]
- b. [CP [PP P [NP lo $\emptyset_{wh}$]] que...]

Nonetheless, by identifying *lo* as an article, Plann (1980) participates in the central debate surrounding *lo*: the categorization question. The following section gives an overview of this debate and of the specific *lo* constructions at the heart of it.

³ Although nowadays the standard assumption is that wh-phrases are DPs, Plann (1980) assumes that they are nouns which may take an article as Specifier. This distinction is not relevant to the present paper. Suffice to say that *lo*, as well as the Prepositional Phrase, are part of the extended projection of the wh-phrase.

⁴ As I show in Section 3, ‘neuter’ is not a descriptively adequate label to describe pronominals that do not express φ features. Nonetheless, demonstratives of this type will be glossed as N (‘neuter’) for simplicity’s sake.

2. The category of *lo*⁵

The syntactic literature on *lo* centers around the question of how to best categorize *lo* and, relatedly, whether *lo* is a single polysemic linguistic object or multiple objects (each belonging in a different category). This section presents a brief overview of some of the most influential attempts to answer these questions. Section 2.1 presents the ‘main’ categorization question, i.e., whether *lo* is an article or a pronoun. Section 2.2 presents approaches that explore or contest the possibility of *lo* being anything other than a determiner in a given context.

2.1. Article or pronoun?

The main overarching question of this debate is whether *lo* is an article or a pronoun. At first glance, this might be considered a non-issue, since a linguistic object defined as *a definite article that selects an inherently null noun* is not meaningfully or functionally different from a linguistic object defined as *a personal pronoun*. However, the bulk of this debate took place before or around the introduction of the DP Hypothesis (Abney, 1987). Therefore, the issue underlying this debate is the structural importance of *lo*, i.e., whether it is the head of the nominal domain or its specifier.

The prominent grammarian Andres Bello is credited as the first person to attempt to categorize *lo* (Luján, 2004). He claimed that *lo* was the ‘weak’ (i.e., clitic) version of the ‘neuter’ pronoun *ello*, which should be used when the pronoun is followed by a modifier (Bello, 1847, as cited in Luján, 2004). By contrast, other early analyses of *lo* categorized it as an article, which selected either a null noun or a modifier that has been ‘nominalized’ (see Contreras, 1973, section 4). This ‘article analysis’ seems to have been the standard assumption, the one made by researchers for whom the broad categorization of *lo* was not a main concern (e.g., Contreras, 1973; Plann, 1980).

Recent analyses of *lo* (Hamalainen, 2004; Stark & Pomino, 2010; Zulaica Hernandez, 2018) present the ‘article vs. pronoun’ debate as an active and ongoing polemic. They each classify *lo* as a pronoun: Hamalainen (2004) following Bosque & Moreno (1990); Stark & Pomino (2010) and Zulaica Hernandez (2018) for independent semantic reasons⁶. However, I have not encountered any arguments in favour of the ‘article’ categorization that are dated any later than the 1980s. This suggests that a consensus has been reached in favour of the ‘pronoun’ categorization. Nonetheless, authoritative dictionary sources (e.g., Real Academia Española, 2021; Diccionario del Español de México, 2021) categorize *lo* as an article in most

⁵ This section is unique in that most of the sources referenced here were written in Spanish. When relevant, translations and glosses are my own.

⁶ Stark & Pomino (2010) claim to side-step the debate, but operate under the assumption that the pronominal system of Latin (and subsequently, Spanish) is based on its semantic feature geometry, and analyse *lo* as part of this paradigm. Zulaica Hernandez follows Roberts (2003), according to whom both DPs with definite articles and pronouns are the same in that they both require a unique referent that is ‘weakly familiar’ (implicitly available in the common ground). The difference between both is a matter of relative salience – the pronoun must refer to the most salient possible referent.

contexts, which might give the impression that the ‘article’ side of the debate is more widespread than it actually is.

2.2. One *lo* or multiple *lo*?

The other side of the categorization debate concerns whether the *lo* found in any specific context should be characterized as a determiner or as something else, like an adverb or a degree word. This debate is centred around pairs such as (5-6). In (5), the adjective *simpático* ‘friendly’ shows default gender and number morphology, as is typical for adjectives selected by *lo* (see Section 3). In (6), the adjective *simpáticas* shows number and gender concord with the predicate *estas chicas* ‘these girls’. The *lo* in sentences like (6), which has an ‘intensifier’ interpretation, is sometimes characterized as an adverb or quantifier. However, authors like Contreras (1973), Gutiérrez-Rexarch (1999) and Bosque & Moreno (1990) have attempted to fold it into the nominal paradigm⁷.

- 5) *Me sorprende lo simpático / *simpáticas de estas chicas*
 ACC.1SG surprise.3SG LO friendly.M.SG friendly.F.PL of MED.F.PL girls
 ‘I am surprised by the friendliness of these girls.’
- 6) *Me sorprende lo simpático / simpáticas que son estas chicas*
 ACC.1SG surprise.3SG LO friendly.M.SG friendly.F.PL that be.3PL MED.F.PL girls
 ‘I am surprised by how friendly these girls are.’

(Contreras, 1973, pp. 20-21)

Contreras’s (1973) analysis differentiates between the ‘non-anaphoric *lo*’ in the sentences above and the ‘anaphoric *lo*’ that acts as a pronominal object and pro-predicate. She claims that the latter is a pronoun, while the former is a definite article that ‘fuses’ with a null pronoun. The difference between (5) and (6) is explained as the result of timing differences in the transformation of each sentence. Gutiérrez-Rexach (1999), following Kayne’s (1994) anti-symmetry framework, argues that the ‘degree’ interpretation comes from a null degree operator located in Spec, DP. This operator is specified for the same ϕ features as the predicate, triggering adjective agreement.

Bosque & Moreno (1990) present the most influential analysis of the categorization of *lo*, in which they argue for a unified analysis. They characterize *lo* as a variable pronoun whose range and denotation are valued by its right-branching modifiers. These modifiers are what trigger the adverb-like interpretation of (6), or the quantifier-like interpretation in (9) below. Bosque and Moreno place themselves in opposition to the ‘article’ analysis that presents these modifiers as being nominalized. They argue that, if this was the case, *lo* would have a wider distribution than it does⁸.

⁷ The properties of *lo* in these structures is beyond the scope of this paper, but it will be briefly addressed in Section 4.

⁸ Specifically, *lo* can only be modified by prepositional phrases headed by the preposition *de* ‘of, about’. If *lo* could nominalize prepositional phrases, there is no principled reason why it would make a distinction between this phrase and others.

Bosque & Moreno (1990) identify three *lo* types, differentiated by their denotations. The Individuating type denotes a set, where *lo* refers to everything to which the set applies. For example, in (1), reproduced as (7) below, *lo* refers to an utterance because the relative clause restricts its potential referents to utterances, as only utterances can be ‘said’. This category also contains ‘nominalized’ adjectives such as (8), where the potential referents are anything that could be described using the adjective, including objects. Individuating *lo* is used as the ‘elsewhere’ category by authors who adopt it, e.g., Hamalainen (2004).

- 7) *Lo que me dijiste me dolió*
 LO that ACC.1SG said.2SG ACC.1SG hurt.3SG
 ‘What you said to me hurt me.’

- 8) *Me encanta lo auténtico*
 ACC.1SG love. SG LO authentic
 ‘I love that which is authentic.’

(Hamalainen, 2004, p. 194)

The Qualitative type denotes the maximal expression of a quality or circumstance. This is the type in (6) above, where *lo* denotes the maximal amount of the property of ‘friendliness’. The final type is the Quantitative type, e.g. (9), where the modifier of *lo* values an interpretation that roughly translates to ‘the proper amount’.

- 9) *No duermo lo suficiente*
 Not sleep.1SG LO sufficient
 ‘I don’t sleep enough.’

(Bosque & Moreno, 1990, p. 32)

Although it purports to be a unified account, this typology centres around what can be termed ‘*lo* + modifier’ constructions. It does not account for those cases where *lo* does not require a modifier to receive an interpretation. In section 4, we will bring the focus back to *lo que* constructions and briefly introduce other *lo* types that have been ignored in most of the literature, showing how the narrow focus of Bosque & Moreno (1990) prevent them from achieving a truly unified account of *lo*. Before that, though, we must look at the most distinctive characteristic of *lo*: its complicated relationship with φ features.

3. The φ features of *lo*

One of the defining characteristics of *lo* is non-concord. *Lo* can only select adjectives and modifiers with default φ feature morphology (10a) or with no φ features (10b). This has led to a traditional characterization of *lo* and other φ -rejecting pronouns⁹ as ‘neuter’, i.e., as having a grammatical gender distinct from ‘masculine’ and ‘feminine’.

⁹ Archaic ‘strong’ pronoun *ello* and demonstratives *eso*, *esto*, *aquello*.

- 10) a. *Lo rojo / *roja / *rojos / *rojas*
 LO red red.SG.F red.PL.M red.PL.F
 'That which is red.'
- b. *Lo que pasó*
 LO that happened.3SG
 'That which happened.'

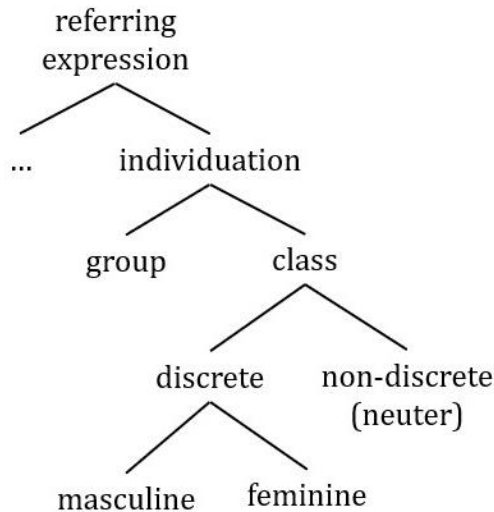
There are a few issues with this characterization, the most pressing one being that there are no neuter nouns in Spanish. The grammatical gender of pronouns with inanimate referents is usually determined by the ϕ features of their referent (Hualde et al., 2012), which begs the question of where *lo* could be getting the neuter feature from¹⁰. Moreover, there is no principled reason for neuter gender to exclude plural morphology in Spanish, further suggesting that *lo* is not grammatically neuter, but devoid of ϕ features.

Stark & Pomino (2010) claim that not only is 'neuter' an incorrect characterization of *lo*, but that the semantic features that have been used in the literature to describe it (e.g., [+abstract], [+proposition], [-animate]) fail to capture the semantic characteristics of the potential referents of *lo*. Instead, they characterize *lo* as a marker of semantic non-individuation. The semantic feature [individuation] refers to the property of being a discrete entity or set. In other words, *lo* cannot refer to individuals, only to 'undifferentiated categories' and things that cannot be individuated, like propositions. Crucially, semantic individuation is distinct from syntactic individuation, i.e., the implementation of mass-count distinctions. Mass nouns in Spanish are specified for grammatical gender and cannot serve as referents for *lo* any more than count nouns can. Mass nouns, while being uncountable, are not truly non-individuated, as they refer to a set (Pomino & Stark, 2009).

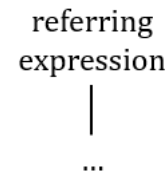
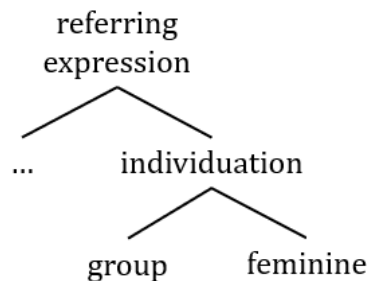
According to Stark & Pomino (2010), non-individuated pronouns are the result of the consolidation of various semantic categories that were morphologically expressed in Latin, Spanish's parent language. They claim that in Latin, grammatical gender is dependent on the expression of the feature [discrete], which encodes mass/count distinctions. The Latin neuter was associated with non-discreteness, as illustrated in (11)¹¹.

¹⁰ If we characterize *lo* as an article that selects a null noun, we could say that the null noun is neuter. However, to postulate a null neuter noun when no overt null nouns exist seems like an *ad-hoc* solution.

¹¹ Stark and Pomino replace the feature [animate] in Harley & Ritter (2002) with the feature [discrete]. The authors motivate this choice by claiming that the gender features [masculine] and [feminine] could not have been dependent on [animate], since Latin had plenty of inanimate nouns that were lexically specified for masculine and feminine gender. This choice does not affect their representation of the Spanish pronominal system or of *lo* as a marker of non-individuation; that node of the tree, regardless of its contents, was reduced into the individuation/non-individuation distinction.

11) Feature geometry of Latin 3rd person pronouns

Over time, semantic features like [class] and [discrete] disappeared from the pronominal system, and gender features became directly associated with the mother node [individuation] (12a). Since non-individuating referring expressions do not have the individuation feature (12b), they cannot have number [group] and gender [feminine] features, triggering the default morphological form *lo*.

12) a. Feature geometry of Spanish 3rd person pronouns b. Feature geometry of *lo*

Stark & Pomino's (2010) proposal provides a straightforward distinction between what can be a potential referent of *lo* (individuals) and what cannot (non-individuals). This distinction provides a principled account for why *lo* lacks φ features without needing to invoke an otherwise unattested neuter grammatical gender. However, it does not address those cases where *lo* seems to be modified by an adjective that expresses number or gender morphology, or where it seems to refer to an individual. These cases are explored in the following section.

4. The referential properties of *lo*

Zulaica Hernandez (2018) presents a comprehensive semantic analysis of the 'neuter' pronominal system, i.e., *lo*, demonstratives *eso*, *esto* and *aquello*, and a null pro-form which

he claims is in complementary distribution with *lo*. He identifies two types of *lo*: referential and denotational. Referential *lo* is a pronoun that can only refer to non-individuals, in line with Stark & Pomino (2010). Denotational *lo* is not a true pronoun in that it has no referent. Rather, it is an expletive mostly associated with pseudo-cleft constructions.

The first two sections introduce referential *lo* (4.1) and denotational *lo* (4.2), broadly classifying ‘antecedent *lo*’ and ‘wh-internal *lo*’ in this typology. Section 4.3 shows how Zulaica Hernandez (2018) fails to account for the distribution of *lo que* constructions, as these constructions seem to be able to accommodate both referential and denotational *lo*.

4.1. Referential *lo*

Referential pronouns refer to the most salient antecedent available the context of the utterance. This antecedent does not necessarily need to be in the discourse, but only implicitly available in the common ground (Roberts, 2003). Zulaica Hernandez identifies referential pronoun *lo* as appearing in the following contexts: as an accusative pronoun¹² (13), a relative pronoun (14), and a pro-predicate (15). These pronominals can only refer to non-individuals. For example, in (13), the referent is a proposition; in (14), it is an event; and in (15), it is a property.

- 13) *Juan llegará tarde, ya te lo había dicho*
 Juan arrive.FUT.3SG late, already ACC.2SG LO had told.3SG
 ‘Juan will arrive late, I had already told you **so**.’

(Modified from Zulaica Hernandez, 2018, p. 21)

- 14) *Juan nunca llegó, lo cual me sorprendió*
 Juan never arrived.3SG LO which ACC.1SG surprised.3SG
 ‘Juan never arrived, **which** surprised me.’

- 15) *Juan es muy descuidado, pero yo no lo soy*
 Juan be.3SG very careless but I not LO be.1SG
 ‘Juan is very careless, but I am not __.’

While *lo que* constructions are not specifically named, ‘wh-internal *lo*’ can be considered as part of the ‘relative pronoun’ category¹³. For example, the referent in (16) is an outcome of some sort, presumably an action or change-of-state. The situation with ‘antecedent *lo*’ is more complicated. The introduction to the paper asserts that the *lo* in ‘free relative’ constructions¹⁴ is denotational. However, the body of the text and all relevant examples refer only to pseudo-cleft constructions (see section 4.2). This leaves the statute of ‘antecedent *lo*’ in non-copular constructions somewhat ambiguous, as I will address in section 4.3.

¹² Not to be confused with 3SG.M accusative pronoun *lo*, which refers to masculine nouns.

¹³ ‘Relative pronoun’ is a broad term for the wh-phrase in the context of relative clauses (Brucart, 2016).

¹⁴ Relative clauses whose antecedent is either null or a simple determiner, a category which includes ‘antecedent *lo*’ constructions. Not to be confused with the ‘free relatives’ in English that have a null complementizer and wh-phrase.

- 16) ... *Ha conseguido aquello por lo que ha luchado* ...
 have.3SG achieved DISTAL,N for LO that have.3 SG fought
 ‘She has achieved that **which** she has fought for.’

(Retrieved from *Corpus del Español* (Davies, 2004))

4.2. Denotational *lo*

Zulaica Hernandez (2018) highlights *lo*’s ability to ‘co-refer’ with an individuated predicate when it is the subject of a pseudo-cleft sentence such as (17). Contrary to the predictions in Stark & Pomino (2010), the DP *una silla* ‘a chair’ refers to a concrete individuated object with lexically specified ϕ -features. Zulaica Hernandez claims that this is not a case of true reference, as the *lo* in these sentences is a denotational pronoun. This denotational pronoun is not a pronoun *per se*, but a function that maps a possible world to the predicate argument of the copula. In example (17) below, *lo* maps the predicate *una silla* to the verb ‘to need’.

- 17) *Lo que necesito es una silla*
 LO that need.1SG be.3SG a.F.SG chair
 ‘What I need is a chair.’

The author argues that most of the constructions commonly studied in the literature are this denotational *lo*, especially the ones in Bosque & Moreno’s (1990) ‘individuating *lo*’ type¹⁵. While Zulaica Hernandez only illustrates this point using pseudo-cleft constructions, it is easy to see how this analysis can be extended to sentences like (8), reproduced below in (18). In these sentences, the ‘potential referent’ of *lo* might include individuated objects (e.g., specific cultural artifacts). The fact that these constructions are best thought of as having a ‘potential’ rather than an ‘actual’ referent suggests that the *lo* in these sentences might indeed be a denotational pronoun¹⁶. Denotational *lo* might also account for the presence of number and gender concord in ‘qualitative *lo*’ sentences such as (6), reproduced in (19). *Lo* in these cases might be mapping the predicate *estas chicas* ‘these girls’ to the possible world of ‘(being) friendly’, triggering concord.

- 18) *Me sorprende lo simpáticas que son estas chicas*
 ACC.1SG surprise.3SG LO friendly.F.PL that be.3PL MED.F.PL girls
 ‘I am surprised by how friendly these girls are.’
- 19) *Me encanta lo auténtico*
 ACC.1SG love. SG LO authentic
 ‘I love that which is authentic.’

¹⁵ If we accept the premise of Stark & Pomino (2010), that *lo* is a non-individuation marker, then ‘individuating *lo*’ becomes an oxymoron.

¹⁶ Zulaica Hernandez (2018) does not elaborate on how the function mapping would work outside of the context of pseudo-cleft constructions. While that question is beyond the scope of this paper, I speculate that phrases like *lo auténtico* might have an underlying small clause structure equating the predicate property with the *lo* subject.

Since ‘denotational *lo*’ can exist outside of pseudo-cleft constructions, this begs the question: Can ‘wh-internal *lo*’ be denotational? I address this issue in the following section.

4.3. Referential ‘antecedent *lo*’ and denotational ‘wh-internal *lo*’

Zulaica Hernandez (2018) draws a sharp distinction between the environments in which *lo* is denotational and the ones in which it is referential. Specifically, he claims that ‘referential *lo*’, being a clitic pronoun, can never be in subject position. This seems to indicate that ‘antecedent *lo*’, which can appear in subject position, is a denotational pronoun, while ‘wh-internal *lo*’, which cannot, is a referential pronoun. However, this proposed distribution falls apart when we examine the *lo que* constructions in more detail.

Let us first examine the case of referential ‘antecedent *lo*’, which, I argue, is found in sentences like (20a). The *lo* DP *lo que me dijiste* ‘what you said to me’ seems to have more nominal-like behaviour than the pseudo-cleft *lo*. The entire modified DP can be replaced by a demonstrative pronoun without the overall meaning of the sentence being affected (20b). Compare to the pseudo-cleft, where the relative clause cannot be replaced without changing the meaning of the sentence (21b). The meaning of (17), reproduced in (21a), is not equivalent to (21b) in the same way that (20a-b) are equivalent to each other.

- 20) a. ***Lo que me dijiste me dolió***
 LO that ACC.1SG said.2SG ACC.1SG hurt.3SG
 ‘What you said to me hurt me.’
- b. ***Eso me dolió***
 PROX.NEUT ACC.1SG hurt.3SG
 ‘That hurt me.’
- 21) a. ***Lo que necesito es una silla***
 LO that need.1SG be.3SG a.F.SG chair
 ‘What I need is a chair.’
- b. ***Eso es una silla***
 PROX.NEUT be.3SG a.F.SG chair
 ‘That is a chair.’

Moreover, ‘denotational *lo*’ needs to map to an available predicate in the discourse to receive an interpretation. In (20a), there is no viable candidate that *lo* could map to. This is in contrast with denotational *lo* in (21a), which maps to *la silla* ‘the chair’. Since (20a) is a grammatical and felicitous sentence, we must assume that *lo* is receiving an interpretation from somewhere. Since there is nothing available in the discourse, it must be retrieving its meaning from the common ground, aka. referencing. Therefore, I maintain that the

referential ‘antecedent *lo*’ that appears in (20a) is an entity distinct from Zulaica Hernandez’s denotational ‘antecedent *lo*’¹⁷.

Let us now turn to the case of denotational ‘wh-internal *lo*’. Zulaica Hernandez classifies the *lo* inside ‘relative pronouns’ as referential, using *lo cual* as his example. A relative clause ‘headed’ by *lo cual* cannot be the subject of a pseudo-cleft construction, as we can see when we try to turn (14) above into one (22). However, prepositional relative clauses with ‘wh-internal *lo*’ can be the subject of a pseudo-cleft, as shown in (23).’

- 22) **Lo cual me sorprendió fue que Juan nunca llegó.*
 LO which ACC.1SG surprised.3SG was that Juan never arrived.3SG
 ‘Juan never arrived, which surprised me.’
- 23) *De lo que estábamos hablando era de la fiesta*
 About LO that were.1PL talking was.3SG about the.F.SG party
 ‘What we were talking about was about the party.’

One might be tempted to declare that ‘wh-internal *lo*’ is not (part of) a referential ‘relative pronoun’, but a denotational pronoun. However, this relative clause can only be sentence-initial in the context of a pseudo-cleft. In (24), paraphrased from (20a), the sentence is only grammatical if *lo* has a linguistic antecedent in the discourse. This suggests that, like ‘antecedent *lo*’, ‘wh-internal *lo*’ might have both a referential and a denotational form. This is a problem for Zulaica Hernandez (2018), who presents both *lo* types as being in complementary distribution.

- 24) *(*Eso de lo que estábamos hablando me dolió*
 about LO that were.1PL talking ACC.1SG hurt.3SG
 ‘(That) which we were talking about hurt me.’

To the best of my knowledge, there is no principled reason why an expletive cannot have the same surface position as the ‘contentful’ version of that form¹⁸, so this issue does not pose an unsurmountable challenge to Zulaica Hernandez’s (2018) proposal. The issue is that distribution was acting as the primary diagnostic between referential and denotational *lo*. Since I have shown this diagnostic to be unreliable, we are left with no reliable way to differentiate between these two types of pronouns¹⁹.

¹⁷ As to why this *lo* can be in subject position, a possible answer is that the clitic attaches to the relative clause, or another is that *lo* is not actually clitic in this specific context. Determining which is the case is a morpho-phonological question well beyond the scope of this paper.

¹⁸ E.g., expletive *it* in *It is raining* vs. referential *it* in *It is eating my tomatoes*.

¹⁹ Another issue with this proposal is that Zulaica Hernandez (2018) defines referential pronouns as only needing an implicit referent in the common ground. As (24) shows, ‘wh-internal *lo*’ needs an overt linguistic antecedent. In fact, out of the types of referential *lo* that Zulaica Hernandez identifies, only ‘neuter’ object *lo* can have an implicit referent. For example, it references a proposition in (i) as a response to an event that brings said proposition to mind. This issue is not addressed by the author.

(i) *Te lo dije*
 ACC.2SG LO told.1SG
 ‘I told you so’

Overall, Zulaica Hernandez (2018) strengthens the semantic analysis of Stark & Pomino (2010) by covering a gap in their proposal, i.e., cases where the non-individuation pronoun *lo* seems to refer to individuals. However, he does not provide clear guidelines for how to identify a referential vs. denotational pronoun outside of a few sample constructions. While his account does provide a broader analysis of the referential properties of more types of *lo*, compared to previous accounts, it nonetheless falls short because of its failure to account for environments where *lo* may be either referential or denotational.

5. The nominal structure of referential *lo*²⁰

The semantic characterization of referential pronoun *lo* as [-individuation] provides a clear explanation for both its inability to co-refer with a nominal and its lack of φ features. At the same time, it leaves the syntactician with a conundrum – how do we represent the nominal structure of something that has definiteness, but no φ features?

Section 5.1 explains why the non-individuation of *lo* presents a challenge for the standard generative understanding of nominal structure, including the potential solutions that could be devised under this framework. Section 5.2 explores an alternative characterization of *lo* using the Universal Spine Hypothesis (USH) framework.

5.1. The *lo* conundrum

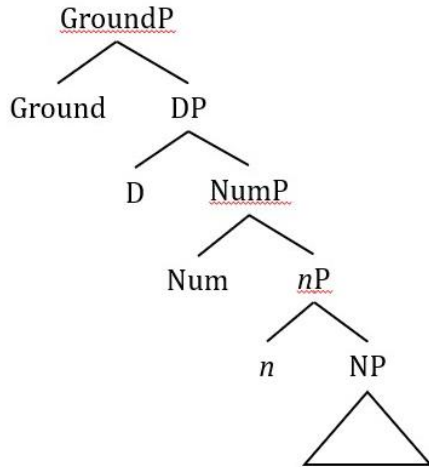
Nominal structure is standardly assumed to contain at least three layers: DP, NumP and NP. A *nP* layer between NP and NumP is also quite common. Syntactic features are introduced through the structure-building operation Merge, in which a feature or lexical item joins the previously formed phrase and creates a new phrase in which it is the head (Chomsky, 1995; 2001). NP is the base layer, associated with the semantic content of a nominal, as well as lexically specified features such as animacy. The features associated with *nP* vary depending on the source, but it is commonly associated with categorization (turning a bundle of features into a noun, verb, or adjective) and grammatical gender (Kramer, 2016). NumP is associated with the expression of number and countability. DP is associated with person and definiteness. Additionally, authors like Ritter & Wiltschko (2019) propose a nominal speech act structure which relates the discourse participants (speaker, addressee, and any other possible referents) to the common ground (GroundP).

Since syntactic structure is built from the bottom up, with lower categories being selected by, and merging with, higher categories, this creates the implicational hierarchy depicted in (25). If a nominal has features associated with a category higher in the tree, it is predicted to have at least some of the features associated with lower categories. That is, a nominal specified for definiteness (D) will have features associated with grammatical number (Num) and gender (*n/N*). Conversely, a nominal that is unspecified for number/countability is

²⁰ Since denotational *lo* is not a true pronoun, but an expletive with no semantic content of its own, it seems safe to assume that it has little nominal structure, if any. Therefore, the rest of this paper focuses only on referential *lo*.

assumed to lack NumP. Therefore, it cannot have person or definiteness features associated with DP.

25) Nominal structure

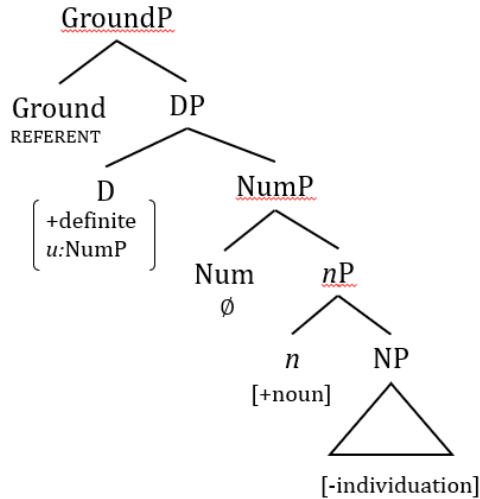
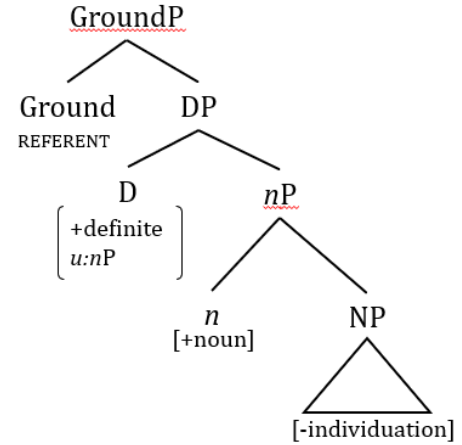


Lo challenges this conception of nominal structure because it does not follow the implicational hierarchy. The defining characteristic of *lo* is non-individuation. That is, it is not specified for grammatical number (singular/plural) and countability (mass/count), the syntactic features realized at Num²¹. Since *lo* does not appear to have a Num layer, it is predicted to be unspecified for definiteness (no DP) and referentiality (no GroundP), and yet it is positively valued for both.

There are two possible solutions to this dilemma, both of which would present a drastic departure from standard theory. The first one is to posit the existence of a Num layer that instantiates neither number nor countability, but only exists to preserve the structure. In other words, an expletive feature (26a). This feature does not have a functional role other than ‘existing between *n* and *D*’, has no semantic content by definition, and cannot be independently motivated. Therefore, this solution would be unacceptably *ad-hoc*. The second possible solution is to posit the existence of a Determiner, positively valued for definiteness, that selects a *nP*, rather than a NumP (26b). While more plausible than the previous solution, introducing a Determiner that can ‘skip layers’ of nominal structure, as it were, predicts the existence of all sorts of syntactic patterns that, to the best of my knowledge, are not attested in nominal structure.

²¹ At this point, we must clarify the difference between default specification and non-specification, since they are morphologically indistinguishable. When a nominal is default specified, it has an unmarked interpretation. For example, a noun negatively marked for [plural] is interpreted as singular. When a feature is non-specified, there is no available interpretation for that feature. For example, a mass noun, which is unspecified for number, is neither singular nor plural. In these cases, we assume that the syntactic head associated with the unspecified feature is not present in the structure (Wiltschko, 2008).

26) a. 'Expletive Num' proposal

b. 'nP-selecting D' proposal²²

It seems that the nominal structure of *lo* cannot be represented without a drastic, *ad-hoc* departure from standard theory. Therefore, it is worth considering whether a drastic but principled departure from standard theory might be able to provide a clearer understanding of nominal structure and the relationship between pronouns and φ features. In the following section, I explore the nominal structure of *lo* using the Universal Spine Hypothesis framework.

5.2. *Lo* and the Universal Spine Hypothesis

According to Universal Spine Hypothesis (USH), the syntax consists of a series of layers associated with specific syntactic functions, called the universal spine (Wiltschko, 2014). These layers are inherent to the structure and present in any utterance; lexical items associate with different points in the spine to gain functional properties. What makes the USH a promising alternative for the syntactic analysis of *lo* is that, since the structure is independent of the lexical content, the absence of content associated with a given layer does not automatically indicate the absence of that layer.

McDonald et al. (2022), working in this framework, propose that pronominals in languages like Japanese are not true pronouns, in the sense that they do not instantiate φ -features. Instead, pronominals in these languages express sociolinguistic traits of the speaker and the addressee, e.g., social status and conceptual gender, as well as of the relationship between the participants. McDonald et al. call these pronominals 'paranouns'. They propose that paranouns merge in the interactional layers of the spine, specifically in the grounding layer.

The grounding layer is composed of two phrases, which together represent the common ground. One represents the speaker's knowledge ($\text{Ground}_{\text{Spk}}$) and the other represents the

²² The features presented in these trees are for illustration purposes only, and not intended to be a complete representation of all the features associated with pronominal structure. In particular, I am unfamiliar with which features would be implemented at GroundP and have used REFERENT as an *ad-hoc* placeholder.

speaker's assumptions about the addressee's knowledge ($\text{Ground}_{\text{Adr}}$). The Specifier of these phrases identifies the holders of these grounds, i.e., the speaker and the addressee. Paranouns merge at either of these Specifier positions to provide additional information about the speaker or addressee.

Lo, like paranouns, does not express φ -features but, unlike paranouns, it does not express sociolinguistic features either. It only expresses definiteness and the semantic content of the proposition/event/etc. that it references. This seems to suggest that *lo* is a pronoun, but pronouns are intrinsically linked with the expression of φ -features. McDonald et al. (2022) state that paranouns have content "*beyond* that of nouns, and beyond what is required for the representation of the discourse referent"²³ (p. 6). This is in contrast with pronouns, which stand in *for* the noun. Since *lo* stands in *for* referents that are not nouns, it might be a paranoun in a completely different way than the socio-linguistically oriented paranouns of Japanese.

Specifically, I suggest that *lo* might attach to the spine as the head of one of the grounding layers, directly providing reference without instantiating φ features. While this has not been attested yet, McDonald et al. (2022) speculate in their conclusion that pronominals that express properties related to the speech act situation, such as definiteness and familiarity, might contain informational structure. Therefore, there is no principled reason that prevents a pronominal from associating with the spine in that position. Unfortunately, the USH and nominal speech act structure are quite new theories. At this moment, these theories have not been developed enough to allow me to present a more detailed prediction of how *lo* might interact with the universal spine.

6. Conclusion

In this paper, I show that what is traditionally called the 'neuter' determiner *lo* is better characterized as a referential pronoun lacking φ features, which refers to non-individuated entities. However, unlike 'structurally defective' pronouns such as impersonal pronouns and expletives, *lo* is a definite pronoun with a specific referent. In addition to this referential *lo*, and following Zulaica Hernandez (2018), I argue that there is a non-referential, expletive *lo*, which relates a possible world to a predicate which may contain morphologically expressed φ features. However, the distribution and referentiality of *lo* in *lo que* constructions indicate that whether *lo* is referential or expletive is not a matter of syntactic position, contrary to Zulaica Hernandez (2018).

Moreover, I show that neither the standard generative approach to nominal structure nor Wiltschko's (2014) Universal Spine Hypothesis are currently able to describe the nominal structure of *lo*. However, the USH presents a more promising avenue for future research because the absence of features associated with Num, and indeed any φ features, does not represent a drastic departure from the present theory. I find it quite likely that a future incarnation of this theory, one that has explored how properties like definiteness integrate

²³ Emphasis is their own.

into the universal spine, will contain the tools needed to explain the syntactic and semantic composition of *lo*.

For now, this paper does not present solutions to the issues it presents beyond brief speculation. Or, it presents a wide range of potential avenues for future research. The biggest unanswered question in this paper pertains to the difference between ‘antecedent *lo*’ and ‘wh-internal *lo*’. As we saw in Section 4, the former can reference something implicitly available in the common ground, while the latter requires an antecedent overtly present in the discourse. Research on this question would have to include other referential *lo* types identified by Zulaica Hernandez (2018) such as ‘neuter’ object *lo* and predicational *lo*.

Additionally, this proposal would have to extend to the rest of the ‘neuter’ pronominal system identified by Zulaica Hernandez (2018), i.e., demonstratives *eso*, *esto* and *aquello* as well as the ‘neuter’ null *pro*. Other avenues of research include looking into whether non-individuation pronouns/pronouns that reject φ features are attested in other languages and whether these languages might provide new insights into the Spanish system.

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On the syntax of Mandarin sentence-final particles: a neo-performative analysis

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Abstract

Mandarin sentence-final particles have been analyzed uniformly as sentence-final complementizers by a group of researchers (Paul & Pan, 2017; Pan, 2019). However, in the present paper, I draw evidence from co-occurring sentence-final particles to demonstrate that in Mandarin, sentence-final particles must co-occur in a fixed order. This observation casts doubts on the assumption that these particles are complementizers because treating them as complementizers does not explain why they appear in a fixed order. Following Wiltschko (2020), I propose that these particles belong to different categories of the interactional structure. I focus my discussion on three representative particles, namely, ne 呢, me 么 and ha 哈. An analysis that assumes an interactional structure above CP can account for some poorly understood co-occurrence restrictions among these particles.

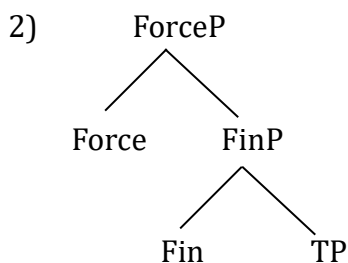
Key words: Mandarin sentence-final particles, interactional structure

1. Introduction

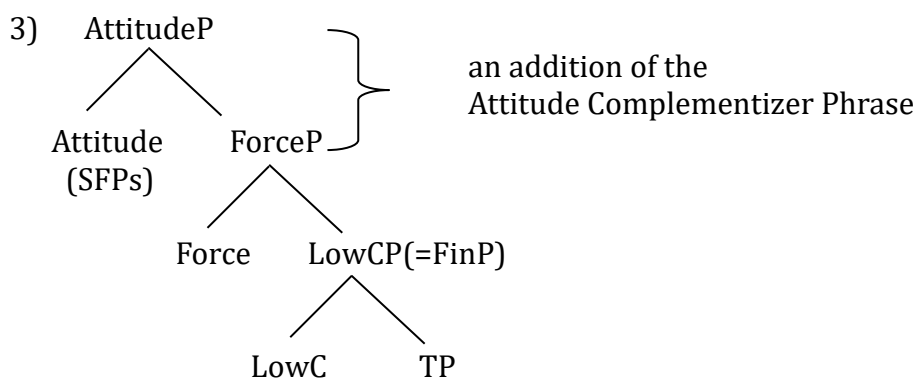
In Mandarin Chinese, the term ‘sentence-final particle’ has been used to describe a class of linguistic items whose categorial status is not clear (e.g. their functions depend on the specific extralinguistic context). Three examples containing sentence-final particles (SFPs) are given in (1a-c).

- 1) a. zhè dōngxi sānbǎi yuán mǎi bù lái **ne**
 this stuff three-hundred CL buy NEG come particle
 “This stuff cannot be bought with three hundred Yuan (**believe me**).”
 (Lu, 1990, p. 264)
- b. Tā zìjǐ bù yào **me**.
 he self NEG need particle
 “He does not need (one) (**you should know this**).”
 (Lu, 1990, p. 270)
- c. Nǐ juéde zhème gàn duì **ha?**
 you think like.this do right particle
 “You think it is right to do this, **eh?**”
 (Yin, 1999, p. 99)

Traditionally, these particles are not considered as part of the sentence structure and hence have no syntactic category (Biberauer, Holmberg, and Roberts 2007, 2008, 2014). However, some recent work on sentence-final particles (henceforth SFPs) has argued that SFPs play a significant role in syntax (Li 2006; Pan 2014, 2017, 2019; Paul 2005, 2014; Paul & Pan 2017; among others). Building on Rizzi’s (1997) analysis of Complementizers (Cs) and their projections (CPs), which suggests that cross-linguistically the C system consists of two distinct categories, Force and Finiteness, (with optional Topic and Focus phrases in between) as shown in (2). Paul and Pan (2017) propose that the Mandarin C system consists of three subprojections LowC<ForceC<AttitudeC, with the addition of a speaker/hearer related projection (Attitude phrase) above Rizzi’s (1997) ForceP, as shown in (3).

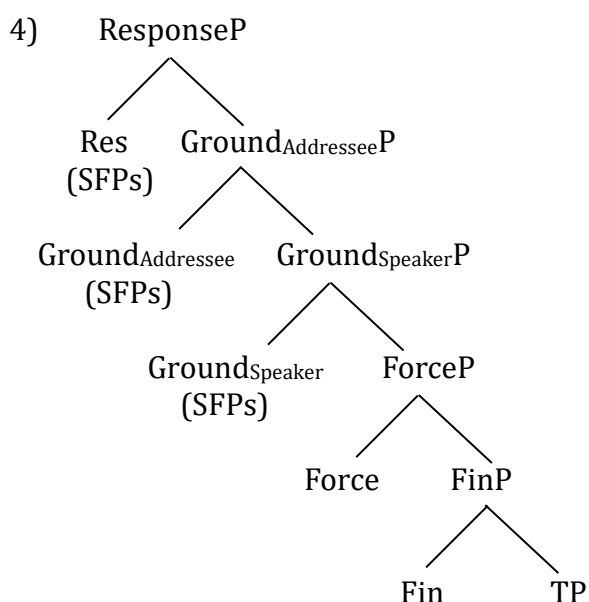


(Modified from Rizzi, 1997, p. 297)



According to Paul and Pan (2017), SFPs are fully-fledged functional heads on a par with C elements in Indo-European languages. SFPs realizing LowCs are comparable to Rizzi's FiniteP, the neutral label "LowC" is chosen because it is unclear whether the [+/- Finite] distinction applies to Mandarin (p.52). Mandarin SFPs that express a certain attitude such as *a*, *ei*, *ou*, *ma*, *ne*, *ba*, etc. are analyzed as the highest C head, Attitude (p.51).

In other work, SFPs have been argued to perform other syntactic functions. Wiltschko (2020) proposes that syntactic structure should not only represent the propositional content but should also represent interactions in discourse. On her view, SFPs are the units of language that represent interactions in discourse. Wiltschko (2020) proposes that the interactional content is represented in the interactional structure above CP. She further argues that the interactional structure itself consists of projections such as $\text{Ground}_{\text{Speaker}}$ Phrase, $\text{Ground}_{\text{Addressee}}$ Phrase and Response Phrase. $\text{Ground}_{\text{Speaker}}$ phrase encodes speaker's attitude towards the proposition while $\text{Ground}_{\text{Addressee}}$ phrase encodes what the speaker believes is the addressee's attitude towards the proposition. Response phrase is dedicated to letting the addressee know what the speaker wants the addressee to do with the current sentence. Wiltschko suggests that some Mandarin SFPs associate with this interactional structure, as shown in (4).



In the present paper, I explore the formal properties of Mandarin SFPs. I argue that Mandarin SFPs do not form one uniform syntactic category, and more specifically that their category is not that of the highest sentence-final complementizers (contra Paul and Pan 2017, Pan 2019; among others). Following Wiltschko (2020), I propose that these particles belong to different categories of the interactional structure and should be further divided into three distinct syntactic categories: Ground_{Speaker} particles, Ground_{Addressee} particles and Response particles. I focus my discussion on three representative particles, namely, *ne* 呢, *me* 么 and *ha* 哈. I suggest that *ne* is a typical Ground_{Speaker} particle, *me* is a typical Ground_{Addressee} particle and *ha* is a typical Response particle. My arguments are mainly based on the co-occurrence of Mandarin SFPs. I will show in detail that when co-occurring with other particles, Ground_{Speaker} particles must appear closer to the host sentence than other particles. Ground_{Addressee} particles must be located in between of the Ground_{Speaker} particles and the Response particles. Response particle can only appear in the sentence-final position following other particles. I will demonstrate that an analysis that assumes an interactional structure above CP can account for some poorly understood co-occurrence restrictions among these SFPs.

The organization of the paper is as follows: In section 2, I critically review some representative literature on Mandarin SFPs. In particular, I discuss why Paul and Pan's (2017) analysis, which treats Mandarin SFPs as the highest complementizers, is inadequate in explaining strict word order observed among these particles. Section 3 reviews Wiltschko (2020), which investigates the interactional structures above the proposition structure (CP). Section 4 discusses three representative Mandarin SFPs that are associated with interactional structure, namely *ne*, *me* and *ha*. I give evidence to show that *ne* is a Ground_{Speaker} particle, *me* is a Ground_{Addressee} particle and *ha* is a Response particle (in the sense of Wiltschko, 2020). Section 5 concludes the paper.

2. Previous literature on Mandarin sentence-final particles

In this section, I review several seminal works on Mandarin SFPs. In 2.1, I discuss traditional views (prescriptive grammar) on Mandarin SFPs such as Zhu (1982), Lu (1990), Yin (1999) and Cui (2011), which all investigate the semantic interpretation of SFPs. As I will show in section 4, the interactional model captures the semantic interpretation of SFPs. In 2.2, I focus on Paul and Pan's (2017) analysis which treats Mandarin SFPs (such as *ne*, *me*, *ha*) uniformly as the highest complementizers. I point out the major shortcomings with their analysis.

2.1. Traditional views of Mandarin SFPs

Mandarin SFPs (traditionally called 语气助词 *yǔqì zhùcí* 'mood particles') have long been a hot topic of linguistic research among Chinese scholars. Zhu (1982) provides an overview of Mandarin SFPs and he discusses the discourse function and the distribution of SFPs (p. 207-215). Zhu argues that there are three general classes for Mandarin SFPs. The first class of SFPs consists of *le* and *laizhe*, which express Tense. The second class of SFPs consists of yes/no question marker *ma*, imperative marker *ba*_{imp} and other particles that express the notion of Force. Force determines whether a sentence is declarative, imperative or

interrogative. The third class of SFPs encode the subjective attitude or feeling of the speaker and consists of particles such as *a*, *ou*, *ei*, *ne* (p. 208). As I will introduce in section 2.2, Zhu's (1982) tripartite division of SFPs has greatly influenced other works, such as Paul and Pan (2017).

Lu (1990) devotes one chapter of his book to discuss the function and interpretation of Mandarin SFPs in discourse. Specifically, Lu (1990) focuses his discussion on a selected set of particles including *ne* (p. 264) and *me* (p. 269). Lu (1999) argues that the use of *ne* indicates a sense of strong belief on the part of the speaker. "*ne* is often used when describing facts about the current situation or facts that will take place in the near future...it expresses things like *you look* or *I tell you this...you should believe in what I am saying...ne* indicates that a certain fact is obvious" (p. 264). "*me* carries a sense of asking the addressee *why you don't even know this ... you should know this...*" (p. 269) [with my own translation].¹

Instead of providing an overview of Mandarin SFPs, other scholars conduct case studies and explore the formal properties of only one particular particle. For example, Yin (1999) and Cui (2011) study the meaning and function of Mandarin SFP *ha*. Yin (1999) and Cui (2011) agree that *ha* is used when requesting a confirmation or acknowledgement from the addressee. Speakers use *ha* with the hope that the addressee will agree on what the speaker is talking about. Cui (2011) notes that "*ha* is not simply a particle that merely completes the sentence ...it has a strong inter-subjective effect on discourse" (p. 42) [with my own translation].

I summarize the interpretation of SFPs *ne*, *me* and *ha* in Table (5).

5) Interpretation of three SFPs

Particles	Interpretation
ne	1) indicates a sense of strong belief of the speaker (Lu, 1990) 2) indicates that a certain fact is obvious (Lu, 1990)
me	1) <i>me</i> carries a sense of asking the addressee <i>why you don't even know this...you should know this</i> (Lu, 1990)
ha	1) <i>ha</i> is used when requesting a confirmation or acknowledgement from the addressee. Speakers use <i>ha</i> with the hope that the addressee will agree on what the speaker is talking about (Yin, 1999; Cui, 2011)

I will argue in section 4 that the semantic interpretation of particles *ne*, *me* and *ha* is in line with analyzing them as Ground_{Speaker}, Ground_{Addressee} and Response particles.

2.2. Generative framework: Paul and Pan (2017)

Other than traditional views, Mandarin SFPs have also been examined under the generative framework (Li, 2006; Pan, 2015, 2017, 2019; Paul & Pan, 2017; among others). In this

¹ Since Lu (1990) is written in Chinese, I translate his original words into English. Throughout the paper, I use [with my own translation] to indicate that the translations are mine.

subsection, I review the analysis proposed by Paul and Pan (2017) since it is the most relevant piece of work to the present paper.

The core proposal of Paul and Pan (2017) (see also Pan, 2019) is that Mandarin has a three-layered split CP structure (LowC<Force<Attitude) and SFPs are complementizer heads that realize each layer of the split CP, as shown in Table (6).

6) The three layers in the split CP

C1 (LowC)		C2 (Force)	C3 (Attitude)
<i>le</i> currently relevant state	<i>éryǐ</i> ‘only’	<i>ba</i> _{imp} (advisative <i>ba</i>)	<i>a</i> softening
<i>laízhe</i> recent past		<i>ba</i> _{Qconfirmation}	<i>ei</i> gentle reminder
		<i>ma</i> yes/no question	<i>ou</i> impatience, surprise
			<i>ma</i> dogmatic assertion
			<i>zhene</i> intensifier
			<i>ne</i> ₃ exaggeration ² <i>ba</i> probability

(Paul & Pan, 2017, p.51)

As indicated in Table (6), SFPs realize three distinct layers of CP. Particles such as *le* and *laizhe* express Tense (Zhu, 1982, p. 9) and occurs nearest to the host sentence and they are the Low Complementizer heads (LowCs). Paul and Pan (2017) further divide LowCP into two subprojections and argue that SFP *éryǐ* belongs to a higher subprojection of LowCP (hence there are two separate columns under C1). The second class of SFPs consist of particles such as *ba*_{imp}, *ba*_{Qconfirmation}, and *ma*_{yes/no question} which all convey the notion of a certain Force and belong to a higher layer of CP, the Force CP. The highest layer of CP is headed by a group of particles which encodes the speaker’s attitude or feelings. Below I cite from Paul and Pan (2017) three examples containing particles from each of the three different layers of CP.

² Here the subscript 3 distinguishes *ne*₃ from other two homonyms *ne*₁ and *ne*₂. However, since I only focus on the SFPs that express attitude, the fact that in Mandarin there may be a *ne*₁ (a Low C) and a *ne*₂ (a Force C) is not relevant for the present paper.

- 7) a. Zuótiān xià yǔ **le/laizhe**
 yesterday fall rain LowC/LowC
 “It rained yesterday.”
- b. Nǐ míngnián qù Běijīng **ma**?
 2SG tomorrow go Beijing Force(C)
 “Will you go to Beijing next year?”
- c. Déguó yǔyánxuéjiā kě duō **ne**!
 German linguists really many ATT(C)
 “(Believe me!) There really are a lot of German linguists!”³
 (7a-c; Paul & Pan 2017, p.51 & p.55)

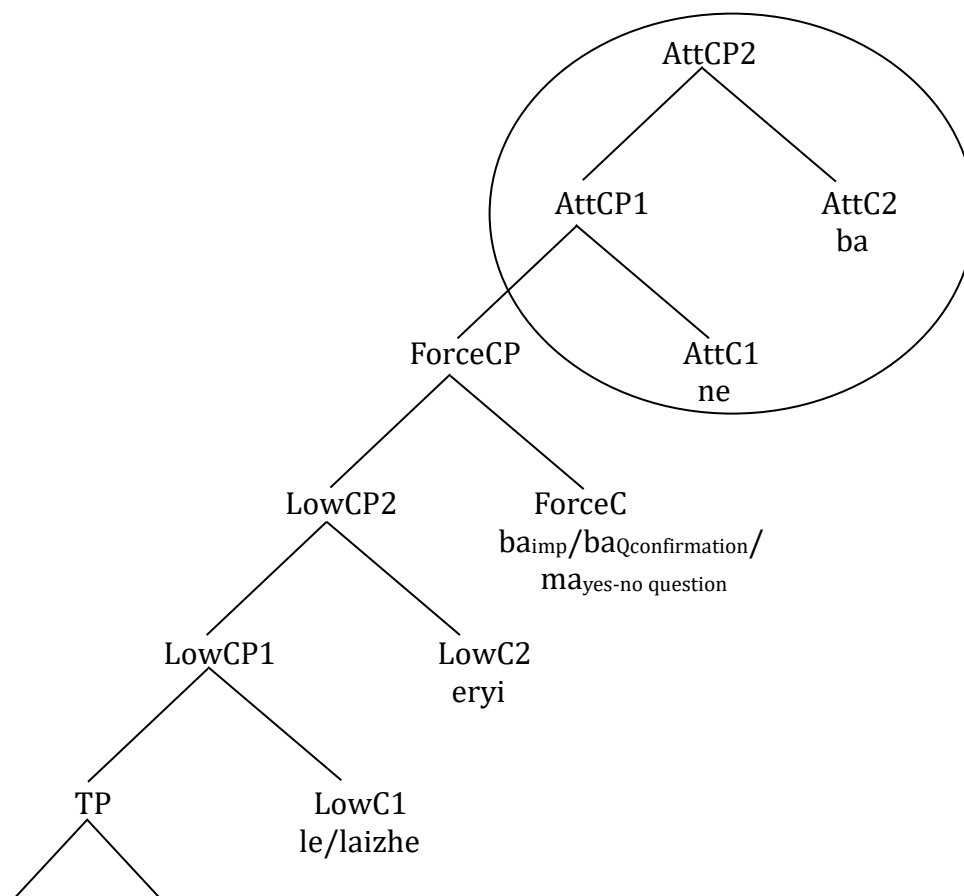
What is crucial for the present paper is that Paul and Pan (2017) further divide Attitude CP into two subprojections and argue that Attitude complementizer phrase headed by *ba* is always higher than the Attitude CP headed by *ne* (hence there are two columns under C3). According to Paul and Pan (2017), sentence (8a) contains two Attitude heads, *ne* and *ba*. The order for these two co-occurring SFPs is fixed: *ne*<*ba* is possible in Mandarin but not *ba*<*ne*, as shown in (8a-b).

- 8) a. [ATT2P [ATT1P [TP Sānshí nián qián hái méi yǒu shǔbiāo] **ne**] **ba**]
 thirty year before still NEG have mouse ATT1 ATT2
 “Thirty years ago, very probably there didn’t even exist anything like a computer mouse.”
- b. *[ATT2P [ATT1P [TP Sānshí nián qián hái méi yǒu shǔbiāo] **ba**] **ne**]
 thirty year before still NEG have mouse ATT1 ATT2
 (Paul & Pan 2017, p.67)

Paul and Pan argue that the fixed order among co-occurring particles is a reflection of their structural hierarchy. On their analysis, the structure of a Mandarin sentence containing SFPs can be roughly represented as in diagram (9). I circle the highest Attitude CPs in diagram (9) since they are the focus of the present paper.

³ The original translation given in Paul and Pan (2017) is “There really are a lot of German linguists!”. I add (Believe me!) here to indicate the fact that the use of *ne* encodes a strong positive belief of the speaker. The speaker firmly believes the content of the proposition is true.

9)



However, the main shortcoming of this analysis is that since all particles that express attitude are analyzed uniformly as the highest complementizers, their analysis gives no satisfactory syntactic account for the strict word order among these SFPs. For instance, why does particle *ne* always precede other particles such as *ba* but the reverse order is never attested in Mandarin? In other words, as a set of linguistic items that express speaker's feeling (e.g. surprise) and completes the sentence, it might be expected that these particles can appear in a relatively flexible order. However, this is not the case.

What makes their analysis even more problematic is the observation that the proposed 'higher attitude complementizer AttC2 *ba* (probability)' can itself be followed by other particles.⁴ For instance, particle *ha* can occur after *ba* but cannot precede it (10a-b). In Paul

⁴ Note that Paul and Pan (2017) do not specifically discuss the properties of particle *ha*. According to Table (6), there are two plausible positions for *ha*. *ha* can either function as a Force marker or a particle that express attitude. However, since in sentences such as (10a), particle *ha* is in the sentence final position following another particle *ba*, it therefore must locate in the highest attitude complementizer position. Also note that (11a) is an example made up by the author, but other examples containing a pair of co-occurring *ba+ha* is also discussed in the literature. Yin (1999) notes the following example (i). In Yin (1999), instead of a comma, he uses a pause marker in between of *ba* and *ha* to show that the pause needs not to be very long which further supports that the final particle *ha* is part of the sentence, not outside of the clause.

(i) Zhè dào tí méi cuò ba, ha? (Yin, 1999, p.103)

and Pan's analysis, there is no position above the AttC2. Consequently, sentences such as (10a) cannot be accounted for using the CP system proposed by Paul and Pan.

- 10) a. Sānshí nián qián hái méi yǒu shǔbiāo **ne** **ba**, **ha**?
 thirty year before still NEG have mouse ATT1 ATT2 particle
 "Thirty years ago, very probably there didn't even exist anything like a computer mouse, eh?"
 b. *Sānshí nián qián hái méi yǒu shǔbiāo **ne** **ha**, **ba**?
 thirty year before still NEG have mouse ATT1 ATT2 particle

The strict order *ne*<*ba* is not an idiosyncratic property only held between two particular particles *ne* and *ba*. Instead, it seems that there is always a strict word order among co-occurring SFPs (such as *ne*<*ba*<*ha* in sentence 10a). Analyzing SFPs that express attitude as complementizer heads fails of explaining why, within an uniform category, some SFPs must precede other particles while some SFPs must follow others. In order to account for the correct word order in (10a), we can certainly further divide AttCP into AttCP1, AttCP2 and AttCP3 with particle *ha* in the highest Attitude complementizer head position. However, by doing this, we are merely describing the surface word order of a sentence and not providing any explanation as to why SFPs must appear in the pattern of *ne*<*ba*<*ha*, but not in any other orders.

3. Interactional structure above the CP

In this section, I review Wiltschko's (2020) recent work on the interactional structure. Following insights of Ross (1970) and Speas and Tenny (2003), Wiltschko (2020) proposes an updated version of the Speech Act structure. Like Speas and Tenny, Wiltschko argues that syntax should include a Speech Act structure which consists of functional projections. However, Wiltschko differs from Speas and Tenny in that she attempts to explore in great detail how the complex interactions between the speaker and the addressee can be reflected in the Speech Act structure. In the remainder of this section, I first use examples from Wiltschko (2020) to illustrate what counts as a typical interaction between the speaker and the addressee. Then, I review her arguments on why Speech Act structure should represent interactions. In other words, why should the Speech Act structure regulate languages used in interactions? Finally, I present her version of the Speech Act structure (the interactional structure) which consists of interactional layers that helps to regulate interactions.

Wiltschko suggests the following dialogue (11) is a typical interaction between interlocutors. *I* stands for initiating role and *R* stands for reacting role.

- 11) *I*: Gal Gadot was amazing as Wonder Woman, **eh**?
R: **Yeah**, I know, **right**? (Wiltschko, 2020, p.2)

Wiltschko notes that in (11) there are several units of language that contribute to managing the interaction. For example, the sentence-final particle *eh* signals that the initiating interlocutor (the speaker) assumes that the reacting interlocutor (the addressee) shares the

speaker's belief that Gal Gadot was amazing as Wonder Woman and encourages the addressee to respond to the speaker. The particle *Yeah* shows the addressee agrees with what has been introduced by the speaker. Similarly, *right* also indicates agreement and makes the agreement more enthusiastic. Wiltschko argues that all these particles add no content to the proposition, they contribute to the interaction instead. Consider the following dialogue (12).

12) I: Gal Gadot was amazing as Wonder Women.

R: I know.

(Wiltschko, 2020, p.3)

Wiltschko points out that (11*I*) and (12*I*) express the same propositional content. However, by adding particles such as *eh*, the interaction gains a different flavor. Unlike (11), in a dialogue such as (12), there is no way to know whether the speaker cares about the addressee's opinions at all because there are no particles that express this type of content. Wiltschko therefore concludes that particles such as *eh*, *yeah* and *right* manage interactions by changing the quality of the interaction.

Having introduced what is a typical interaction, now, I briefly discuss Wiltschko's reasoning why syntax should represent interactions and why Speech Act structure should include interactional layers that regulate interactions. As argued by Wiltschko and Heim (2016), what constitutes as a clause depends in part on the linguistics context. For example, we can define a clause as something that minimally contains a subject and a predicate and expresses a proposition. If we adopt this definition, we get small clauses such as *John walk his dog*. Small clauses such as *John walk his dog* cannot function as a matrix clause. Instead, matrix clauses containing an inflected verb such as *John walks his dog* are often analyzed as an IP. Now note that in some embedded contexts, both small clauses and inflected clauses without a complementizer become ungrammatical. Omission of complementizer *that* is sometimes possible, but not in the complement of factive verbs like *regret* that take a factive complement. As shown in (13a-c), only an embedded clause containing a complementizer is grammatical.

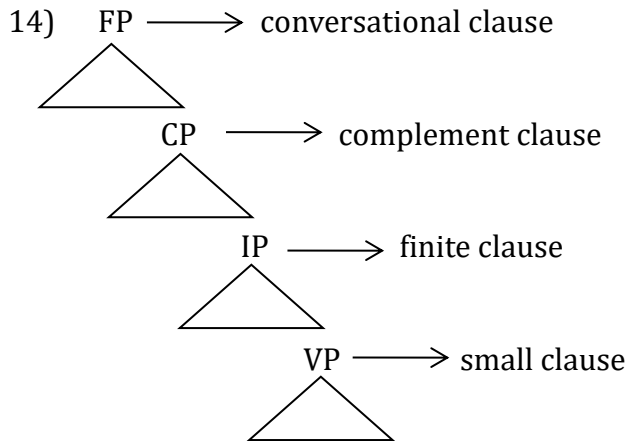
13) a. I regret that John walks his dog.

b. *I regret John walk his dog.

c. *I regret John walks his dog.

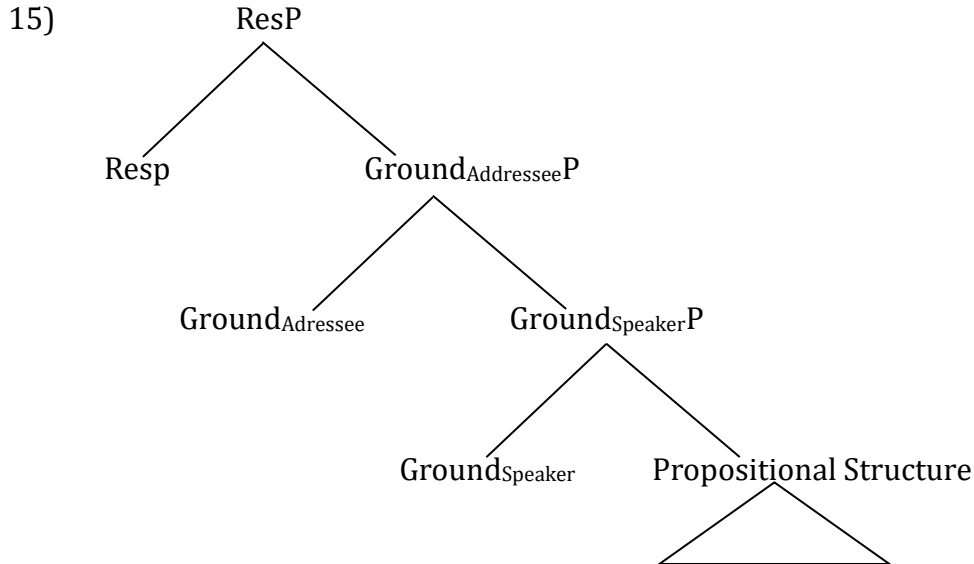
Sentences may grow depending on the immediate linguistics context. Wiltschko and Heim therefore argue that the definition of a clause is not straightforward, and it is not sufficient to define a sentence as consisting of a subject and a predicate (p. 315). For small clauses, a clause can be the size of a VP. For clauses with an inflected verb, a clause is an IP. Certain verbs, such as *regret*, necessarily require a CP as their clausal complement.

Crucially, Wiltschko and Heim further suggest that there are contexts in which a clause grows to include structure that hosts sentence-final particles, such as *eh*. For example, in dialogues such as (11), particles such as *eh* are an obligatory part of the clause since they manage the interaction. Wiltschko and Heim argue that the size of a clause may further grow into (14) which has one or more functional phrases over the CP. These functional phrases capture the complex interactions between the speaker and the addressee in conversations.



(Wiltschko & Heim, 2016, p. 315)

In order to capture the complexity of speech acts in conversations, Wiltschko (2020) proposes an interactional structure that regulates interactions between interlocutors. Wiltschko proposes two core functions of this interactional structure. First, this interactional structure serves to manage the common ground (common ground refers to presumed background information shared by participants in a conversation; Stalnaker, 1978) between the interlocutors. Second, interactional structure aids the interplay between initiating and reacting moves such as turn-taking (Wiltschko, 2020, p. 3). Wiltschko proposes three specific functional projections in this interactional layer: a $\text{Ground}_{\text{Speaker}}$ Phrase, a $\text{Ground}_{\text{Addressee}}$ Phrase and a Response Phrase, as shown in (15).



(simplified diagram from Wiltschko, 2020, p. 108)

The Grounding Phrases manage the common ground between the interlocutors. $\text{Ground}_{\text{Speaker}}$ phrase encodes the speaker's attitude towards the proposition and $\text{Ground}_{\text{Addressee}}$ phrase encodes what the speaker believes is the addressee's attitude toward the proposition. The Response Phrase serves to aid interplay between initiating and reacting moves and regulate interactions such as turn-taking. It encodes what the speaker wants the addressee to do with the utterance. By postulating Ground Phrases and a Response

Phrase, Wiltschko's analysis successfully captures the complexity of speech acts in conversations.

4. The analysis

In this section, I present my analysis of Mandarin sentence-final particles (SFPs). I argue that SFPs associate with categories of the interactional structure. My core proposal is that Mandarin SFPs should not be treated uniformly as complementizers (contra Paul & Pan 2017). Instead, I present evidence to show that Mandarin SFPs should be analyzed as *Ground_{Speaker}* particles, *Ground_{Addressee}* particles and *Response* particles in the sense of Wiltschko (2020). I discuss three representative particles *ne*, *me* and *ha* in detail and I argue that *ne* is a typical *Ground_{Speaker}* particle while *me* is a *Ground_{Addressee}* particle. For particle *ha*, I adopt the analysis of Wiltschko (2020) and Yang and Wiltschko (2016) that this SFP is a *Response* particle. I offer additional arguments based on distribution to support their analysis.

4.1. Particle *ne* as a *Ground_{Speaker}* particle

I present two types of evidence to demonstrate that *ne* is a *Ground_{Speaker}* particle. First, its semantic interpretation suggests that particle *ne* functions as a *Ground_{Speaker}* particle. Lu (1999) summarizes the conditions of use for *ne* as follows: *ne* indicates that the speaker believes a certain fact is obvious. It implies a sense of "look...I tell you this...you have to believe me" (p. 264) [with my own translation], as shown in (16).

- 16) Zhè dōngxi sān bǎi yuán mǎi bù lái **ne**.
 this stuff three hundred CL buy NEG come ATT
 "You cannot buy this for three-hundred Yuan (**believe me**)."

(Lu, 1999, p. 264)

In (16), the use of *ne* indicates that the speaker strongly believes in this proposition. Since *ne* expresses that the speaker is certain about the proposition, it functions as a *Ground_{Speaker}* particle which encodes speakers' attitude towards the proposition.

Second, linear order restrictions imply that *ne* is a *Ground_{Speaker}* particle. When co-occurring with other interactional particles, *ne* always occur closer to its host sentence than any other particles, as shown in (17a-d).

- 17) a. Nǐ shì hái méi zhǎngdà **ne** **me**⁵
 you be yet not grown.up particle particle
 "Have you not grown up? (**I tell you this...you should know this**)."
 b. *Nǐ shì hái méi zhǎngdà **me** **ne**
 you be yet not grown.up particle particle
 Intended: "Have you not grown up? (**I tell you this...you should know this**)."

⁵ Example (17c) is slightly modified from Xun, Rao, Xiao and Zang (2016).

- c. Wǒ bà hái zài Xīzàng méi huí lái **ne** **ei**
 my father still at Tibet NEG return particle particle
 “My father has not returned from Tibet yet (**I tell you this...I remind you**).”
- d. *Wǒ bà hái zài Xīzàng méi huí lái **ei** **ne**
 my father still at Tibet NEG return particle particle
 Intended: “My father has not returned from Tibet yet (**I tell you this...I remind you**).”

When co-occurring with other particles such as *me* and *ei*, particle *ne* must appear closer to the host sentence. When *ne* is farther from the host sentence than *me* or *ei*, the sentence is ungrammatical. This linear order restriction is in line with analyzing *ne* as a Ground_{Speaker} particle, which is the lowest position in the interactional layer. As a Ground_{Speaker} particle, it comes as no surprise that *ne* can never follow other interactional particles⁶.

4.2. Particle *ha* as a Response particle

Yang and Wiltschko (2016) discuss the form, distribution and function of the Mandarin confirmational marker *ha* in detail. In what follows, I first summarize their analysis of the interpretative content of *ha*. They show that the interpretative content of *ha* qualifies it as a Response particle. Then I add distributional evidence to support their analysis that *ha* is a Response particle.

Yang and Wiltschko (2016) argue that particle *ha* is often used to request confirmation. In the following example, the declarative sentence (18a) is an assertion. In contrast, the same sentence followed by the particle *ha* (18b) is used for requesting a confirmation.

- 18) a. Nǐmen shì jiǔ diǎnzhōng kāi mén de
 you:PL be nine o'clock open door NOM
 “You opened at nine o'clock.”
- b. Nǐmen shì jiǔ diǎnzhōng kāi mén de **ha**
 you:PL be nine o'clock open door NOM particle
 “You opened at nine o'clock, right?” (18a-b; Yang & Wiltschko, 2016, p.68)

As shown in (18b), particle *ha* indicates that the speaker explicitly requests a response from the addressee. This pragmatic function indicates that *ha* can be analyzed as a Response particle, on a par with the English Response particle *eh*.

Aside from Yang and Wiltschko (2016), other researchers such as Yin (1999) and Cui (2011) also suggest that the primary function of particle *ha* is to indicate a request for confirmation from the addressee. It is therefore reasonable to assume that Mandarin SFP *ha* associates with the Response layer of the interactional structure.

⁶ The interactional properties of particle *ei* are discussed in Paul and Pan (2017). Also note that I gloss *ei* as “I remind you” and this is a rough approximations corresponding to the analyses given in Paul and Pan (2017).

If *ha* is indeed a Response particle, it is expected that *ha* can only occur at the sentence-final position. This prediction is borne out, as shown in (19) a-d⁷.

- 19) a. Zhè tiān kě zhēn lěng **ne**, **ha**?
 this weather so really cold particle particle
 “(Believe me when I say that) Today’s weather is really cold, **eh**?”
- b. *Zhè tiān kě zhēn lěng **ha**, **ne**?
 this weather so really cold particle particle
 Intended: “(Believe me when I say that) Today’s weather is really cold, **eh**?”
- c. Tā měitiān zǎoshàng dōu kāichē shàngbān **de** **ha**?
 she everyday morning all drive work particle particle
 “(I confirm that) She drives to work every morning, **eh**?”
- d. *Tā měitiān zǎoshàng dōu kāichē shàngbān **ha** **de**?
 she everyday morning all drive work particle particle
 Intended: “(I confirm that) She drives to work every morning, **eh**?”

As clearly reflected in (19a-d), when co-occurring with other particles such as *ne* and *de*, *ha* can only be located in the sentence-final position. It can never appear before *ne* or *de*. The position of *ha* therefore supports that *ha* is a Response particle. Yin (1999) also explicitly comments that *ha* must be put after other particles, such as *ne*. It cannot occur before other particles (p.102) [with my own translation].

4.3. Particle *me* as a Ground_{Addressee} particle

Having discussed particles *ne* and *ha*, now I turn to another particle *me*. In some contexts, particle *me* encodes that the speaker assumes that the addressee believes the propositional content to be true⁸. Compare the following examples.

- 20) Scenario: Zhang is sixteen years old. One day, he broke a vase. His mother was shaking her head and said the following sentence.
- a. Nǐ hái méi zhǎngdà **me**? Wǒ juéde shì.
 you yet not grown.up particle I think be
 “Have you not grown up (**you think you have not grown up**)? I think so.”
- b. Nǐ hái méi zhǎngdà **me**? Wǒ bù juéde.
 you yet not grown.up particle I not think.so
 “Have you not grown up (**you think you have not grown up**)? I don’t think so.”
- c. #Nǐ hái méi zhǎngdà **me**? Wǒ bù zhīdào nǐ de xiǎngfǎ
 you yet not grown.up particle I not know you De thought
 “Have you not grown up (**you think you have not grown up**)? I don’t know what you think.”

⁷Example (19c) is slightly modified from Wiltschko (2020, p. 111).

⁸ It is common for Mandarin SFPs to be multi-functional and carry different meanings. It is therefore difficult to pin down the exact semantic contribution of a particle. Here I only focus on the contexts where *me* functions as a Ground_{Addressee} particle.

Consider the examples (20a-c). In (20a), the use of particle *me* indicates that the mother assumes her child Zhang believes that he has not grown up yet. *Me* is not speaker-oriented and it encodes nothing about the speaker's own attitude towards the proposition. This is evidenced by the fact that *me* is compatible with either a following sentence which expresses that the speaker believes the proposition is true (20a) or expresses that the speaker thinks that the proposition is false (20b). In sharp contrast, in (20c), the following utterance *wo bu zhidao ni de xiangfa* "I don't know what you think" makes it clear that the speaker has made no assumption about the addressee's belief towards the proposition. This contradicts the use of particle *me*. When using *me*, the speaker is expressing her assumption that the addressee believes he has not grown up yet. Therefore, the well-formedness of (20a-b) and the infelicity of (20c) imply that *me* must be an addressee-oriented particle that encodes the speaker's assumption that the addressee believes the proposition is true.

If *me* is indeed a Ground_{Addressee} particle, it is predicted that *me* appears between a Ground_{Speaker} particle and a Response particle. As shown in the following examples (21a-d), this prediction is borne out.

- 21) a. Nǐ hái méi zhǎngdà **ne** **me**, **ha**?
 you yet not grown.up particle particleparticle
 “(Believe me when I say that) You have not grown up (you think you have not grown up), eh?”
- b. *Nǐ hái méi zhǎngdà **me** **ne**, **ha**?
 you yet notgrown.up particle particle particle
 Intended: “(Believe me when I say that) You have not grown up (you think you have not grown up), eh?”
- c. *Nǐ hái méi zhǎngdà **ne** **ha** **me**?
 you yet not grown.up particle particle particle
 Intended: “(Believe me when I say that) You have not grown up (you think you have not grown up), eh?”
- d. *Nǐ hái méi zhǎngdà **me** **ha** **ne**?
 you yet not grown.up particle particle particle
 Intended: “(Believe me when I say that) You have not grown up (you think you have not grown up), eh?”

Examples (21a-d) show that particle *me* is able to locate in between of *ne* and *ha*. The fixed order between particles *ne*, *me* and *ha* (*ne*<*me*<*ha*) favors analyzing *ne* as a Ground_{Speaker} particle, *me* as a Ground_{Addressee} particle and *ha* as a Response particle. Note that the only acceptable order of these three co-occurring particles is *ne*<*me*<*ha*, any other orders will be judged unacceptable.

The primary advantage of associating Mandarin SFPs with the interactional structure is that it allows us to account for the strict order among co-occurring particles. Recall the following examples (22a-b) from Paul and Pan (2017).

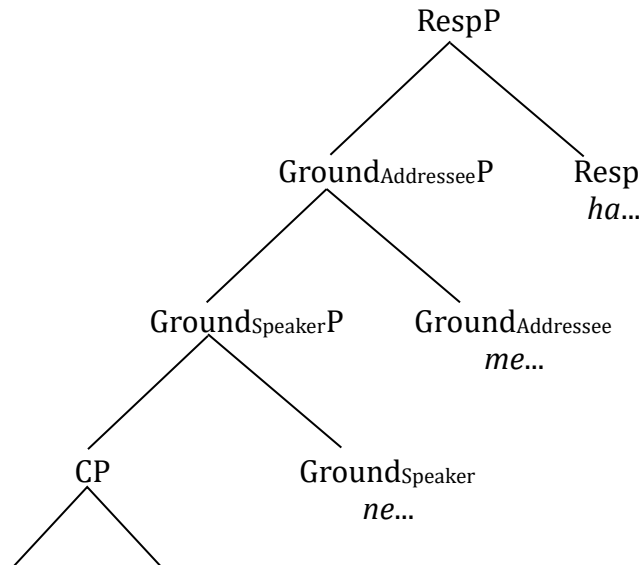
- 22) a. [ATT2P [ATT1P [TP Sānshí nián qián hái méi yǒu shǔbiāo] **ne**] **ba**]
 thirty year before still NEG have mouse ATT1 ATT2
 “Thirty years ago, very probably there didn’t even exist anything like a computer mouse.”
- b. *[ATT2P [ATT1P [TP Sānshí nián qián hái méi yǒu shǔbiāo] **ba**] **ne**]
 thirty year before still NEG have mouse ATT1 ATT2
 Intended: “Thirty years ago, very probably there didn’t even exist anything like a computer mouse.” (Paul & Pan 2017, p. 67)

If we adopt the analysis I present in this paper and treat particle *ne* as a Ground_{Speaker} particle, it should come as no surprise that Ground_{Speaker} particle *ne* must always be located closer to the host sentence than any other interactional particles.

5. Conclusion

In this paper, I investigated the syntactic properties of Mandarin SFPs. I pointed out that Paul and Pan’s analysis cannot account for the strict linear order among co-occurring SFPs. Following Wiltschko (2020), I argued that Mandarin interactional SFPs can be analyzed as Ground_{Speaker}, Ground_{Addressee} and Response particles. Drawing evidence from their interpretative content and their distribution, I argued that *ne* is a typical Ground_{Speaker} particle, *me* is a typical Ground_{Addressee} particle and *ha* is a typical Response particle, as shown in (23). By associating particles such as *ne*, *me* and *ha* with the interactional structure, poorly understood linear order restrictions can be readily accounted for.

23) Mandarin interactional particles and the interactional layer



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Appendix A: particles and their corresponding Mandarin character

Particle	Mandarin Character	Resources	Semantic Contribution	What category is it?
<i>ne</i>	呢	Lu(1999)	speaker believes the proposition is true	Ground _{Speaker}
<i>me</i>	么	Lu(1999)	speaker assumes that the addressee believes the proposition is true	Ground _{Addressee}
<i>ha</i>	哈	Cui (2011); Yin (1999); Yang & Wiltschko (2016)	speaker requests confirmation from the addressee	Response

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