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FROM THE UNEXPECTED TO THE UNBELIEVABLE: THETICS, MIRATIVES AND EXCLAMATIVES IN CONCEPTUAL SPACE

by

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DISSERTATION

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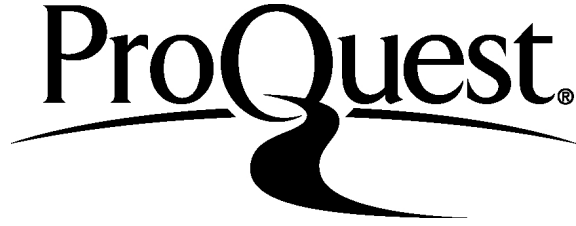The University of New Mexico

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DEDICATION

A Rebeca, mi compañera en este viaje de lo inesperado a lo increíble

y a Isaac, que ha llenado mi vida de anticipación y orgullo

My deepest gratitude goes to my wife, Rebeca, for her love and support. I would like to dedicate this work to her and to our son Isaac.

"Now to Him who is able to do exceedingly abundantly above all that we ask or think… to Him be glory" (Eph. 3:20-21).

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ABSTRACT

This study investigates the relationship between three linguistic functions: thetics, miratives and exclamatives. Thetics are an information structure configuration that conveys that the information is new to the addressee. The thetic subtypes selected for this study are the following: existentials (e.g. *There are apples in the kitchen*); presentatives (e.g. *Here's your book*); weather statements (e.g. *It rains*); physical sensation statements (e.g. *My HEAD hurts*) and hot news (e.g. *MIchael JACKson died*). Thetics do not perform a predication but present the state of affairs as a whole. Crosslinguistically, they tend to use morphosyntactic strategies that distinguish them from prototypical predications. Similar morphosyntactic strategies can also be found in miratives and exclamatives. Miratives are defined as grammatical markers that convey that the

information is suprising for the speaker, whereas exclamatives are defined as a sentence type that conveys surprise with respect to a scalar extent that has surpassed the current expectations (e.g. *How beautiful you are!*). I hypothesize that the structural similarities between these functions are motivated by semantic resemblance. The structural features of these functions are compared in a sample of 76 languages, from which 360 constructions were extracted. Multidimensional scaling was used in order to construct a spatial representation of the degree of similarity/dissimilarity of the constructions. The resulting spatial map shows a dimension motivated by a semantic distinction between event-central and entity-central statements. It also shows a second dimension motivated by the following distinctions: 1) an existential domain, 2) a presentational domain, 3) a mirative domain, and 4) an exclamative domain. Several case studies illustrating the relationships between the functions are presented. It is also demonstrated that miratives can establish a distinction between unexpected and misexpected events. As for exclamatives, it is shown that they are related to linguistic hedges that convey the degree of membership of an item into a category. Several neurobiological and psychological correlates are proposed: thetics correspond to two types of awareness, whereas miratives and exclamatives are related to different stages of a cognitive-evolutionary model of surprise.

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ABBREVIATIONS

→	acting (on)	DIM	diminutive
1	first person	DIST	distal
2	second person	DOWN	downward
3	third person	DS	different subject
1-	prefix for class 1	DU	dual
6-	prefix for class 6, etc.	DUB	dubitative
ACT	actor, actor voice	DUR	durative
ADJR	adjective suffix	EMPH	emphatic
Adv	adverb	ERG	ergative
AG	agentive	EXCL	exclamation
ANA	anaphoric	EXST	exist(ence)
APR	apparentive	EVID	evidential
APPL	applicative	F	feminine
ASS	assertive	FACT	factitive
AT	attributor	FRAG	fragment marker
ATT	attenuative	FREQ	frequentative
AUX	auxiliary	FOC	focus
CAUS	causative	FUT	future
CERT	certainty particle	FV	final vowel
COMP	complementizer	GEN	genitive
CONN	connective	GER	gerund
CONT	continuous	GOAL	goal postposition
COP	copula	H	high tone
CNTR	contrastive	HDST	hyperdistal
CS	copula subject	HUM	human
DECL	declarative	IDPH	ideophone
DEF	definite	IMM	immediate (past, future)
DEM	demonstrative	IMPF	imperfect
DET	determiner	IND	indicative

INDF	indefinite	PROP	proprietive
INFR	inferential evidential	PROX	proximal
INST	INSTRUMENTAL	POSS	possessive
INT	interrogative	PROG	progressive
INTJ	interjection	PROX	proximal
INTR	intransitive	PST	past
INTS	intensifier	PTCL	particle
IRR	irrealis	PFCT	perfect
IV	initial vowel	PRS	present
L	low tone	RDP	reduplication
LOAF	low affectedness	REL	relative clause marker
LIG	ligature	REP	reportative
LOC	locative	RL	realis
M	masculine	SBJ	subject
M	mid tone	SBR	subordinator
MIR	mirative	SEQ	sequential, consecutive
MOD	modifier	SENS	sensory evidential
NEG	negative	SF	subject focus
NCRT	non-certainty	SG	singular
NFNL	nonfinite/nonfinal	SS	same subject
NOM	nominative	STAT	stative
NR	nominalizer	STI	stance marker
OBJ	object	SUP	superlative
OBL	oblique	TNS	tense
OST	ostensive	TOP	topic
ONOM	onomatopoeia	TR	transitive
PL	plural	UP	upward
PNCT	punctual	USIT	usitative
PRED	predicative		
PRN	pronoun		

CHAPTER 1: INTRODUCTION

Language is not only a vehicle for expressing our thoughts, but also our feelings and emotions. Nevertheless, the study of the linguistic expression of emotions has been largely neglected. As Maynard observes, "the formal linguistics that has dominated linguistics in the later half of the 20th century has consistently pushed aside and marginalized the emotional aspect of communication" (Maynard 2002: xi).

Among emotions, surprise seems ubiquitous. We may not express many emotions on a daily basis, but in our interactions we frequently convey that a state of affairs is unexpected or surprising. Surprise is here understood as "the sense of astonishment and wonder that one feels toward the unexpected" (Mellers et al. 2013: 3). Hence, surprise is linked to expectations, which have a pervasive role in human behavior (Hoorens 2012: 142). Even in extralinguistic domains such as music enjoyment, we can find a high level of dependence on the listener's expectations (Huron 2006). Considering the persistency of expectations in our life, it would be odd if languages did not develop grammatical systems to express unexpectedness and surprise.

The aim of the present research is to study three linguistic functions that are related to unexpectedness and surprise: thetics, miratives and exclamatives. Moreover, as will be shown, these functions have important formal similarities between them. They will be defined in the following sections.

1.1 Thetics

Theticity has been described as an information-structure configuration that introduces new entities or events in the discourse. Thetic constructions usually use a

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morphosyntactic or intonational marking that contrast with a more prototypical subject-predicate, or topic-comment configuration. The topic-comment configuration is regarded as the most prototypical structure in which a predicate is ascribed to a subject or topic that is already active in the addressee's mind. In other words, topic-comment constructions evoque prototypical subject-predicate sentences; for instance, *The dog runs in the field,* in which a subject (*The dog*) is stated, and a predicate (the activity of running in the field) is ascribed to it. In order to illustrate the difference between a topic-comment and a thetic construction, let us consider the following pair of sentences:[1]

(1) a. The Pope DIED[2].
    b. The POPE died.

We have the same exact sentence; only the intonational contour has changed. This change, however, denotes a pragmatic difference. Specifically, both sentences differ with respect to the referents the speaker assumes as active in the addressee's mind. Sentence (1a) has a prototypical intonational pattern, with an accented predicate (the accent on the subject would be optional in this case). This is the pattern of prototypical topic-comment constructions in English. In fact, this sentence could have been uttered at the death of John Paul II in 2005, whose passing occurred at an advanced age and while being sick. Thus, the Pope was relatively active in the public's mind, and the event of his passing was clearly expected. In terms of information structure, the sentence ascribes a predicate (his decease) to a previously established topic (the Pope).

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[1] This example is based in Schmerling's (1976) example discussed in §2.1.2.
[2] Throughout this work, prosodic prominence is represented by capital letters.

On the other hand, sentence (1b) has a thetic intonational pattern: a deaccented predicate and an accentuated subject. This intonational pattern has been described as conveying a state of affairs that is new and unexpdected. For instance, example (1b) could have been uttered at the death of John Paul I in 1978, which occurred unexpectedly, only 33 days after he was elected Pope. In this case, since the topic is not active in the public's mind and cannot have been anticipated, it would have been odd to utter this sentence with the intonational pattern of example (1a), which assumes that the addressee already has the Pope in mind. Thus, the appropriate intonational pattern is the one in example (1b), which conveys that the sentence as a whole represents new information: an unexpected state of affairs.

Sentence (1b) is an instance of what has been described in the literature as a 'hot news' statement. This construction has been regarded as one of the most important thetic subtypes. It is usually stated that a thetic statement can be elicited as an answer to the question, *What happened?* On the other hand, example (1a), a topic-comment construction, is rather an answer to a more specific question (e.g. *What happened to the Pope?*).

There are two different approaches to the study of thetic statements in linguistics. Focus-based theory, advocated in Lambrecht (1994), suggests that example (1a) has focus over the predicate whereas example (1b) has focus over the whole sentence. Thus, in this theory, the difference between a topic-comment structure and a thetic structure relies on the scope of the focus applied to the construction.

A second approach to theticity has been to consider the thetic statement as opposite to the topic-comment statement (also known as categorical statement) as a

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different kind of predication, namely, "a simple assertion without any predicative force" (Sasse 1987: 513). This approach is often labeled as the thetic/categorical distinction, and its most influential proponent is Sasse (1987, 2006). In this approach, the function of thetic statements is described as "to convey information whose content is sudden or unexpected as a whole" (Sasse 1987: 570).

Both approaches will be explained in more detail in §2.1.2. Here, I will describe two important aspects of thetics, namely their general morphosyntactic properties and the thetic subtypes.

Sasse (1987) asserts that crosslinguistically, thetics depart from the prototypical topic-comment structures by using an array of morphosyntactic strategies such as subject inversion and incorporation. According to Sasse, this is the way that the thetic/categorical distinction is represented in the world's languages. It is not that thetics have specific morphosyntactic properties, but rather that they use formal strategies that distinguish them from prototypical sentences in the language in question. Sasse explains this feature of thetics as follows:

> Now what can a speaker of a language do in order to avoid the predicative interpretation of an entitiy-event combination? The answer is not hard to find: he must take pains to use grammatical forms which render the predicative relation nonpredicative (Ibid: 560)

Thus, the formal peculiarities of thetics distinguish them from topic-comment or categorical statements. This property of thetics is fundamental for the present investigation because it can be said that miratives and exclamatives also have this property, at least to some degree, as I will explain below.

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Sasse argues that theticity is not a clear-cut category but "a conglomeration of similar presuppositional/assertional conditions prevailing in similar semantic areas, which are frequently expressed by comparable constructions in different languages" (2006: 300). In this framework, the problem of thetic subtypes becomes relevant.

Scholars acknowledge that theticity is composed of a variety of functions. However, their precise classification is still undecided. For this study, I will consider the following thetic subtypes:

a. Existentials (e.g. *There are three Tasmanian devils in the zoo*).

b. Weather statements (e.g. *It is snowing*).

c. Presentatives (e.g. *HERE's John*).

d. Physical sensation (e.g. *My HEAD hurts*).

e. Hot news statements (e.g. *The POPE died*).

These subtypes are less controversial than others proposed.[3] Most authors agree with the characterization of these functions as thetics. For the sake of clarity, I will maintain the division among thetic subtypes instead of merely addressing these functions under the more general label of 'thetic'.

1.2 Miratives

Mirativity is usually defined as the grammatical marking of unexpected information (DeLancey 1997). Mirative constructions express that the information is new, unexpected and even surprising for the speaker. One very well known instance of mirativity is the morpheme *miş* in Turkish, which is an evidential suffix with mirative overtones. The

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[3] See §2.1.4 for a discussion of thetic subtypes.

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following example illustrates the constrast between the neutral past suffix *di* and the

evidential suffix *miş*:

(2) Turkish (Altaic, Turkic)[4]
    a. Kemal gel-**di**
       Kemal come-**PAST**
       'Kemal came'.
    b. Kemal gel-**miş**
       Kemal come-**MIR**
       'Kemal came.' (Slobin & Aksu 1982: 187; cited in DeLancey 1997: 37)

    Sentence (2a) simply states that Kemal came. On the other hand, sentence (2b)

can have the following interpretations:

1) Inferential: the speaker sees Kemal's coat hanging in the front hall, but has not yet

    seen Kemal.

2) Hearsay: The speaker has been told that Kemal has arrived, but has not yet seen

    Kemal.

3) Surprise**:** The speaker hears someone approaching, opens the door, and sees Kemal –a

    totally unexpected visitor. This is the mirative interpretation.

    Thus, mirativity in this case is only one of the possible interpretations of *miş*.

Furthermore, we say that, in Turkish, mirativity is linked to the evidential system. This

link between evidentiality and mirativity is frequently attested in the world's languages,

but it is by no means a necessary condition of mirativity. In fact, DeLancey (2002) and

Aikhenvald (2012) have demonstrated that mirativity can be encoded in grammar as an

independent category, separated from evidentiality.

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[4] The genetic classification of the languages cited mainly follows Dryer and Haspelmath
(2013). For the languages not found in this source, Lewis et al. (2013) was consulted.

In contrast to theticity, which is relatively well established as a widespread phenomenon, miratives are still regarded as an exotic feature scarcely found in the world's languages. This does not mean that mirativity, as a semantic function, cannot be conveyed in most languages. English, for example, has a mirative intonation contour (see DeLancey 2002), in spite of mirativity not being coded in English grammar.

Notice that one semantic difference between miratives and thetics is that miratives express that the information is unexpected or surprising to the speaker. In other words, miratives are grounded in the speaker's perspective. This is not the case with thetics, at least in principle, as they are rather grounded in the addressee's perspective.

On the other hand, one important similarity between thetics and miratives is that miratives also seem to depart in a sense from prototypical topic-comment constructions. DeLancey has formulated this property of miratives as departing from an 'ideal of knowledge':

> At a more abstract level, evidentiality and mirativity, as well as modality, can be thought of as conceptually related. Each represents THE GRAMMATICAL INDEXATION OF WAYS IN WHICH A PROPOSITION CAN DEVIATE FROM AN IDEAL OF KNOWLEDGE. The unmarked form in an evidential system typically represents information which the speaker knows from first-hand, visual perception. Propositions conveying information obtained by other means (aural perceptions, hearsay, or inference) are marked for source of evidence. MIRATIVITY MARKS WHETHER THE INFORMATION REPRESENTS KNOWLEDGE WHICH IS NEW TO THE SPEAKER, OR KNOWLEDGE WHICH IS ALREADY INTEGRATED INTO THE SPEAKER'S PICTURE OF THE WORLD. TYPICALLY THE MIRATIVE, INDICATING NEW OR UNEXPECTED INFORMATION, IS THE MARKED CATEGORY, AND OLD OR INTEGRATED INFORMATION IS PRESENTED IN THE UNMARKED CLAUSE TYPE. In a language such as English with a grammaticalized system of modality, the unmarked category represents knowledge which the speaker presents with complete confidence of its truth. Deviations from this level of certainty are marked by appropriate exponents of the modal system (DeLancey 2001: 379-80; emphasis added).

Thus, DeLancey compares modality, mirativity and evidentiality as means to establish that a proposition is deviating from an ideal of knowledge, namely information that has not been assimilated or goes against the speaker's assumptions. Thus, DeLancey's observations seem to echo the thetic/categorical distinction described by Sasse.[5]

1.3 Exclamatives

First, it is important to distinguish between exclamatives and mere emphatic assertions. Any assertion, command, or question can be emphasized, and thus be represented in writing with an exclamation mark. On the other hand, in modern studies, the term 'exclamative' is restricted to utterances involving a scalar extent. This restriction was first introduced in the work of Michaelis and Lambrecth (1996a; 1996b; Michaelis 2001), who defined exclamatives as utterances that express surprise towards a surpassed scalar extent (e.g. *How beautiful you are!*). In fact, exclamatives were understood in this sense since classical antiquity, when they were given the status of independent sentence types (Mates 1973: 15). As I mentioned at the beginning of this chapter, generative grammar neglected the study of linguistic forms related to emotions, and this was clearly the case with exclamatives. Exclamatives received scarce attention from generative linguists.[6] In the early seventies, generative grammarians attempted to explain sentence types by proposing the existence of abstract performative verbs in the surface structure, and it was

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[5] We will return to this point in §2.2.

[6] In his book on degree words, Bolinger (1972b) presented an independent analysis of some exclamative constructions, unrelated to generative accounts. Bolinger's ideas on exclamatives will be discussed in Chapter 6.

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in this scenario that exclamatives were incorporated to modern linguistic studies (e.g. Elliot 1974). As a consequence of this methodology, the concept of sentence type became associated and often identified with the concept of speech act. For instance, Sadock and Zwicky (1985: 155) define sentence type as a "coincidence of grammatical structure and conventional conversational use". Such definition is practically undistinguishable from the concept of speech act. Furthermore, they define exclamatives as expressive speech acts (using the traditional speech act taxonomy).[7] "The function of exclamatory sentences is much like that of declarative sentences, except that exclamations are intended to be expressive whereas declaratives are intended to be informative" (Ibid: 162). Although Sadock and Zwicky's definition of exclamatives is very broad —some of their examples could be classified as miratives rather than as exclamatives— they still consider exclamatives as a 'minor' sentence type because they are rather uncommon in the world's languages.

König and Siemund (2007: 282) add another reason for considering exclamatives as a minor sentence type, which is that exclamatives lack a syntactic structure of their own. Instead, they borrow structures from declaratives or interrogatives. This argument is in fact not new, but can be traced to the generative account of exclamatives, which regarded exclamatives as a syntactic structure highly dependent on interrogatives (see §2.3).

Certainly, exclamatives tend to resemble interrogatives, but this by no means can be stated as a universal. In the world's languages, we can find several other

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[7] The most well-known speech act taxonomy is that proposed in Searle (1976).

morphosyntactic strategies to form exclamatives, such as exclamative particles. More
importantly, when exclamatives use structures borrowed from other sentence types, they
seem to do it in a similar manner than thetics, namely, deviating from prototypical topic-
comment constructions. Table 1 shows some examples of convergences between thetic
and exclamative strategies in this sense.

Thetic Strategy (Sasse 1987)	Examples of Thetics	Examples of Exclamatives
Split Structures (subject separated from clause):	French*:* *C'est maman qui me bat* 'Mom is hitting me' (Sasse 1987: 538)	French: *C'est incroyable qu'est-ce qui est devenu de notre ville!* *'It's incredible what has become of our city'* (Michaelis 2001: 1042)
SV inversion	Spanish: *Se rasgó el papel* 'The paper was torn' (Sasse 1987: 531)	Spanish: *¡Qué bonita está tu falda!* 'What pretty skirt you have!'
Unmarked predicates (deaccentuated)	*The BUTTER melted*	*GOD that boy can talk* (Michaelis & Lambrecht 1996a: 384)
Independent relative clauses	French *et ma femme qui est malade!* 'but my wife is sick!' (Sasse 1987: 539)	French *Le bruit qu'ils font!* 'The noise they make!' (Michaelis, 2001: 1048)

Table 1: Some examples of thetic strategies described in Sasse (1987) and examples of
exclamative construction using a similar strategy.

1.4 Research Questions

Although thetics, miratives and exclamatives can be related to unexpectedness, they have
distinct character. Thetics are related to new information, but not all information that is
new is necessarily unexpected. Also, as already mentioned, thetics are oriented towards
the addressee's perspective. On the other hand, miratives specifically convey that the

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information is surprising for the speaker. Finally, exclamatives are also speaker-oriented but more specific: they convey surprise with respect to the degree of a scalar property.

Each of these functions constitutes a field of research on its own. In fact, they usually have been investigated independently from each other. The present work is the first investigation of the relationship between the three functions. My aim is to explain the connections of these functions in conceptual space, that is, how their meanings are related to one another. The results of this investigation will show that these linguistic functions are not isolated from each other, but rather connected in conceptual space. Moreover, it is also possible to identify a process of subjectification that often blurs their semantic boundaries. At the end of this research, we will understand that a proper assessment of thetics, miratives and exclamatives requires conceptualizing them not as independent functions but rather as complementary parts of a whole system of expression of surprise, which has psychological correlates in the cognitive processes by which we assimilate new information. Moreover, in Chapter 7 we will see how each of these functions has a specific role in these cognitive processes. As will be shown, this process goes from the mere perception and awareness of entities and events to the assimilation or classification of new configurations. We will see how this processes are clearly mirrored in the linguistic structures.

Moreover, the comparison of these functions will also be useful to solve several theoretical problems that have arisen from the consideration of each function in isolation.[8]

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[8] These theoretical problems are explicated in Chapter 2.

This study also aims to fill a gap in the literature on these functions. On the one hand, as was previously mentioned, a crosslinguistic comparison of thetics, miratives and exclamatives has not been attempted. On the other hand, none of these functions has been the subject of a typological survey using a large sample of languages.

Thus, the aim of the present study is to compare the formal structures that convey these functions in a relatively large language sample in order to investigate the universal features of the functions and the relationships between them. Hence, this work is inserted into the linguistic subdiscipline of linguistic typology or typological generalization, which can be broadly defined as "the study of patterns that occur systematically across languages" (Croft 2003: 1); the general objective being "to find universally valid, basic principles which hold for all languages" (Haspelmath et al. 2001: 1).

Since the present study also aims to compare the representation of linguistic knowledge with other conceptual structures,[9] it also can be considered as a study in cognitive linguistics (see Croft & Cruse 2004: 2).

The sample constructed for this investigation comprises 76 languages, from which more than 300 constructions have been extracted. In order to visualize such amount of information, I will use multidimensional scaling. As I will explain in more detail in §3.3, this method will be used in order to obtain a graphic representation of the structural similarities of the functions compared. This representation can be interpreted in a similar way than traditional semantic maps (see Haspelmath 2003 and §3.3). Moreover, I hypothesize that similar functions will have similar structural features, and the spatial

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[9] See Chapter 7.

map produced by the multidimensional scaling analysis will display the connections of the functions in conceptual space.

After obtaining the spatial representation, several case studies based on the polysemous forms will be used to complement the investigation (see Chapter 6).

In respect to the specific arrangement of functions, I hypothesize that mirativity constitutes an intermediate function between thetics and exclamatives. This intermediate character of miratives will be evidenced in instances of constructions having thetic and mirative meaning, or mirative and exclamative meaning, as well as in the accommodation of functions in the spatial map.

This work is organized as follows: Chapter 2 presents a comprehensive theoretical background for thetics, miratives, and exclamatives, and also details the research hypotheses. Chapter 3 explains the methodological procedures, namely the formation of the language sample, the criteria for coding the functional data, and the method of analysis. Chapter 4 presents the coding criteria for the structural features and the results of a first multidimensional scaling analysis. Chapter 5 presents the coding criteria adopted for a second and final multidimensional scaling analysis and a discussion of the results. Chapter 6 discusses several case studies supporting and expanding the findings presented in Chapter 5. Chapter 7 explains the psychological correlates of the region of conceptual space described in the previous chapters. Finally, Chapter 8 presents the conclusions of the study.

CHAPTER 2: THEORETICAL BACKGROUND

As was argued in Chapter One, theticity, mirativity and exclamativity pertain to different research traditions. In this chapter, I will explain the theoretical background of each function separately.

The following exposition focuses on theoretical works rather than on descriptive studies. However, many descriptive studies were used as data sources and several of them will be discussed in Chapter Six.

2.1 Theticity

As was argued in §1.1, two distinct approaches can be distinguish in the study of theticity. Lambrecht's approach takes a linguistic concept, focus, and extend it to the analysis of thetics. On the other hand, Sasse's approach is in a sense more philosophical, because it relies on considering thetics as a different type of predication (and thus, a different type of judgment). In fact, Sasse's study is more connected with the roots of the study of theticity, which arose as a philosophical problem. Moreover, in reintroducing the concept of theticity into linguistics, Sasse had been influenced by another linguist, S. Y. Kuroda, who in the early seventies explored the concept of the thetic judgment, borrowing it directly from the philosophy of Anton Marty (Kuroda 1972b). Most studies on theticity acknowledge this fact, and usually Brentano and Marty are credited with the introduction of the concept in philosophy. However, this is a mistake. The concept was actually coined much earlier, by Fichte. Furthermore, I suggest that Kuroda's use of the concept of the thetic judgment incurred in some inaccuracies that have been perpetuated in the literature on thetics, and that can only be dissipated with a historical examination of

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the concept as was developed in philosophy. In addition, the historical study of the concept of the thetic judgment will be useful for understanding several aspects of the linguistic study of theticity. For example, the linguistic validity of considering all thetic subtypes as instances of theticity since some thetics subtypes were introduced earlier than others, and with different preoccupations in mind.

Thus, I will discuss the philosophical and linguistic approaches to theticity in separate sections for the sake of clarity.

2.1.1   The Thetic Judgment in Philosophy

As was mentioned above, linguistic studies on theticity usually attribute the concept of the thetic judgment to Brentano and Marty. Nevertheless, the concept of the thetic judgment pertains to an older tradition. It actually can be traced to Kant, although the credit for the original formulation of the thetic judgment must be given to Fichte, a contemporary of Kant.

As I mentioned in §1.1, one of the main and undisputed thetic subtypes is the existential statement. In fact, the existential statement was from the beginning at the center of the theoretical discussion from which the concept of the thetic judgment arose. This discussion began with Kant's treatment of the existential proposition.

In his theory of judgment, Kant embraced the Aristotelian view of the judgment as a relationship between a subject and a predicate. Consequently, Kant did not considered existential proposition as proper judgments. According to Kant, existential propositions do not establish a subject-predicate relationship, but merely 'posit' the subject in question: "in all existence there is substance, i.e., something that can exist only

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as subject and not as mere predicate" (1787/1995: B 289). Thus Kant specifically stated that the existential copula was not a real predicate:

> *Being* [or *to be: Sein*] is obviously not a real predicate, i.e., it is not a concept of anything that can be added to the concept of a thing. IT IS MERELY THE POSITING OF A THING [IN ITSELF] or of certain determinations in themselves. In its logical use it is merely the copula of a judgment. The proposition *God is omnipotent* contains two concepts that have their objects: God and omnipotence… [On the other hand, in stating *There is a God*] I posit no new predicate as added to the concept of God, but POSIT ONLY THE SUBJECT IN ITSELF WITH ALL ITS PREDICATES; viz., I posit THE OBJECT in reference to my CONCEPT. Both must contain exactly the same; and hence nothing further can be added to the concept –which expresses only the [object's] possibility –merely because (through the expression *it is*) I think this object as given ABSOLUTELY. And thus the actual contains no more than the merely possible (Ibid: B 626-27; emphasis added).

Notice that Kant's formulation of the existential judgment is very close to the modern linguistics formulation of the thetic statement (see e.g. Sasse 1987).

In his *Critique of Pure Reason,* Kant was preoccupied with two aspects of judgments: their logical properties and the properties of reasoning that judgments display. In respect to the logical properties of judgments, he introduced a famous distinction between analytic and synthetic judgments (Ibid: B 11-14). Both kinds of judgments establish a relationship between a subject and its predicate, the difference being that, in analytic judgments, the predicate is already contained in the subject. For example, in the proposition *A bachelor is an unmarried man*, the characteristic of being unmarried is already present in the concept of bachelor. Thus, this proposition is an analytic judgment. On the other hand, in synthetic judgments, the predicate is external to the subject; for example, in the proposition *Sea turtles are an endangered species* the property of being endangered is not included in the concept of sea turtle. Thus, the proposition is a synthetic judgment.

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Kant also studied the properties of reasoning that judgments display —he named this study 'transcendental logic'. In this matter, he distinguished between affirmative judgments, negative judgments and a third type of judgment that he labeled as 'infinite'. Kant's infinite judgment is also connected with the history of the thetic judgment. Thus, a brief explanation of the infinite judgment is necessary.

In an infinite judgment, the predicate states that the subject is included in an unspecified set, in the sense of not being clear what objects pertain to the set in question. Kant exemplifies the infinite judgment with the statement *The soul is nonmortal:*

> Now if I say… The soul is nonmortal, then I have indeed, in terms of logical form, actually affirmed something; for I have posited the soul in the unlimited range of nonmortal beings. Now what is mortal comprises one part of the whole range of possible beings, and what is nonmortal comprises the other. Hence my proposition says nothing more than that the soul is one of the infinite multitude of things that remain if I take away whatever is mortal. But to say that is only to limit the infinite sphere of all that is possible, viz., to limit it to the extent that what is mortal is separated from it and the soul is posited in the remaining space of the sphere's range. But despite this exclusion [of what is mortal from it], this space still remains infinite; and even if we take away from it still more parts, this does not in the least increase the concept of the soul and determine it affirmatively. Hence although such judgments are infinite as regards logical range, they are actually merely limitative as regards the content of cognition as such (Ibid: B 97-98).

In other words, the range of elements that constitute the referents of the predicate of an infinite judgment is not clear. Moreover, with respect to the properties of reasoning, the infinite judgment is rather negative in the sense that it merely establishes what the subject is not, rather than what the subject is.

Kant's transcendental logic enterprise appealed to another philosopher: Johann Gottlieb Fichte (1762-1814). Being more ambitious than Kant in this respect, Fichte attempted to challenge the most fundamental principles of logic, which Kant had

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accepted uncritically. As part of his project, Fichte reformulated Kant's infinite judgment. First, he changed its name to 'thetic'. The reason for this change was arguably that Fichte opposed the thetic judgment to two other basic forms of judgment: antithetic and synthetic. Essentially, Fichte's antithetic and synthetic judgments correspond to Kant's synthetic and analytic judgments, respectively. These new labels aim to describe the basic character of each type of judgment in a clearer manner: in synthetic judgments (from Greek *syntithenai,* 'to put together') one concept is already part of the other (as in the example *A bachelor is an unmarried man*), whereas in antithetic judgments (from Greek *antithetos* 'placed in opposition') two opposite concepts are combined, in the sense that one is not included in the other (as in the example: *Sea turtles are an endangered species*). Synthetic and antithetic judgments were based in a dichotomy already proposed by Kant. However, the novelty of Fichte's approach was the introduction of the thetic judgment (from Greek *tithenai* 'put down, place'), as a third form of basic judgment. Fichte regarded the thetic judgment as 'neutral', consisting of the 'absolute positing' of a concept, instead of relating two concepts to one another (as antithetic and synthetic judgments do).

In some respects, Fichte's formulation of the thetic judgment is a systematization of Kant's taxonomy aiming to include Kant's existential proposition as part of the basic judgments. However, an important difference between Kant and Fichte's approaches is that, for Kant, the existential proposition was not a proper judgment, whereas Fichte considers the existential proposition as a judgment of some kind (thetic, in his terminology). Moreover, for Fichte, the thetic judgment is not completely equivalent to the existential proposition. This is because Fichte attempted to construct a whole new

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theory of reasoning. Fichte explains reasoning as the result from an opposition between the self and the external world. In this respect, the first and foremost judgment is *I am*, because this judgment establishes a distinction between the self and the object of cognition. This is actually a thetic judgment in Fichte's terms, because the self is positing herself as an object, becoming aware of her own existence.

This judgment, *I am,* is not really stating what the self is, but is simply differentiating the self from the external world. For this reason, Fichte describe this judgment in similar terms that Kant's existential proposition. However —and interestingly— Fichte also relates the judgment *I am* with Kant's infinite judgment (explained above). As Fichte explains: "*Selfhood* (self-reverting activity, subject-objectivity, or what you will) is initially contrasted to the *it*, to mere objectivity; and the positing of these concepts is absolute, and unconditioned by any other positing; IT IS THETIC, NOT SYNTHETIC" (1797/1982: 72; emphasis added).

> The first and foremost judgment of this type [i.e. thetic] is 'I am", in which nothing whatever is affirmed of the self, the place of the predicate being left indefinitely empty for this possible characterization. All judgments subsumed under this, i.e., under the absolute positing of the self, are of this type (even if they should not always happen to have the self for logical subject); for example, man is free. This judgment can be regarded, on the one hand, as positive (in which case it would read: man belongs to the class of free beings), and then a ground of conjunction would have to be given between man and free beings, which, as the ground of freedom, would be contained in the concept of free beings generally, and of man in particular; but, far from it being possible to provide such a ground, we cannot even point to a class of free beings (Fichte 1797/1982: 114-15).

In other words, the judgment *Man is free* is apparently relational (joining a subject with a predicate, thus pertaining to the category of antithetic or synthetic judgments). However, the impossibility of determining exactly a particular class of free beings makes this judgment thetic, because this judgment is only arrived at by the self positing herself

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as a free being. In this manner, Fichte merged Kant's existential proposition with Kant's infinite judgment.

Notice that, the method for arriving to an infinite judgment is different in both authors. For Kant, one arrives to an infinite judgment by stating what the subject is not, rather than by establishing what it is. For Fichte, one arrives to the infinite (thetic) judgment by an absolute positing of the self as such (as a free being, in this case). According to Fichte, the thetic judgment always entails the absolute positing of the self.

> –So ist das Geschmacksurtheil: A ist schön, (soviel als in A ist ein Merkmal, das im Ideal des Shönen auch ist) ein thetisches Urtheil; denn ich kann jenes Merkmal nicht mit dem Ideale vergleichen, da ich das Ideal nicht kenne. ES IST VIELMEHR EINE AUFGABE MEINES GEISTES, DIE AUS DEM ABSOLUTEN SETZEN DESSELBEN HERKOMMT, es zu finden, welche aber nur nach einer vollendeten Annäherung zum Unendlichen gelöset werden könnte. –Kant und seine Nachfolger haben daher diese Urtheile richtig *unendliche* genannt, obgleich keiner, soviel mir bewusst ist, sie auf eine deutliche und bestimmte Art erklärt hat. (Fichte 1845/1965: 117-18; emphasis added)
> [–The judgment of taste, A is beautiful (so far as A contains a feature also present in the ideal of beauty), is likewise a thetic judgment; for I cannot compare this feature with the ideal, since the latter is unknown to me. IT IS, RATHER, A FUNCTION OF MY SPIRIT, DERIVED FROM THE ABSOLUTE POSITING OF MYSELF, in order to discover this ideal, though one that could only be resolved after a complete approximation to the infinite. –Thus Kant and his followers have very properly described this judgments as *infinite*, thought nobody, so far as I know, has explained them in a clear and determinate manner].[10]

In other words, the judgment *A is beautiful* is thetic because in formulating it I posit myself in an absolute manner and by this positing I intuitively grasp the ideal of beauty —to the extent this ideal can be grasped.

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[10] I based the translation of this passage on Heath's translation of Fichte's *Science of Knowledge* (1797/1982: 115). However, I rendered a more literal translation of some parts of the text in order to make clearer Fichte's idealist position. Heath translates *eine Aufgabe meines Geistes* as 'a mental task', but Fichte's literal expression is 'a function of my spirit'. I also translated *gelöset* as 'resolved' instead of 'discharged' because it seems to me that 'resolved' renders Fichte's idea in a clearer manner.

Fichte's intricate formulation of the thetic judgment was given a new orientation in the work of Johann Friedrich Herbart, who continued the study of the thetic judgment (Martin 2006: 58). On the one hand, Herbart identified thetic judgments with existential propositions; on the other hand, he described existential propositions as subjectless sentences. This formulation was still opposite to the Aristotelian conception of the judgment as a combination of subject and predicate. Thus Herbart acknowledged the existence of judgments without a subject. A disciple of Herbart, Moritz Drobisch, continued this line of study of the thetic judgment, aiming to integrate it to a system of logic. Although Drobisch also identified the thetic judgment with the existential proposition, some of his examples are reminiscent of Fichte's original formulation:

> Examples: There is lightning; it is raining; there is fire; there are forebodings; there is a God; there is no devil, there are no witches, and so on; there are religious, irreligious and agnostic men; there are neither fairies nor elves nor goblins; there is either providence or fate; it is true, that everything good is beautiful; it is not true that if virtue is not rewarded then all morality is an empty illusion. (Drobisch 1863: 61; cited in Martin 2006: 60)

Notice that the judgment *It is true that everything good is beautiful* cannot easily be subsumed under the category of existential propositions. This example, along with *It is not true that if virtue is not rewarded then all morality is an empty illusion* are rather reminiscent of Fichte's original proposal —the ideal of virtue, for example, remains unknown, and its knowledge, although incomplete, is the result of the absolute positing of myself as a function of my spirit. Thus, it seems that Drobisch still has Fichte's philosophical stance in mind with these examples. On the other hand, in order to formalize the thetic judgment, Drobisch followed Herbart's formulation of the thetic judgment as subjectless. Hence, for Drobisch, thetics judgments have the logical form

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There is P [est ist P], "where the small word '*es*' ('it' or 'there') indicates the empty subject position" (Drobisch 1863: 60; cited in Martin 2006: 60). Drobisch's attempt however was not successful.

> Drobisch sought to resolve an anomaly in Kantian logic, by showing how the paradigmatic logical characterization of judgment could accommodate the thetic judgments upon which Fichte and Herbart had insisted. But the strategy Drobisch used was insufficiently radical. The logical accommodation ultimately failed, because it attempted to graft a form of judgment onto a core theory that tends systematically to exclude it. If judgment is essentially the combination of representational content then it cannot ultimately accommodate judgments that do not at root involve the combination of representations (Martin 2010: 391).

Aristotelian logic only accounted for subject and predicate combinations. Thus, the formalization of the thetic judgment actually required a new system of logic, as was Fichte's original idea. The philosopher Franz Brentano confronted this challenge.

Brentano elaborated a new system of logic based on the thetic judgment, as an alternative to Aristotelian logic. Brentano starts by observing that mental phenomena are always directed towards an object. "This intentional in-existence is characteristic exclusively of mental phenomena. No physical phenomenon exhibits anything like it. We can, therefore, define mental phenomena by saying that they are those phenomena which contain an object intentionally within themselves" (Brentano 1924/1973: 89). Brentano classifies all mental activities in three categories: presentations, judgments, and phenomena of love and hate. We are concerned here with the first two types.

A presentation (*Vorstellung*) is, in general, anything that appears to our thought or perception.

> We speak of a presentation whenever something appears to us. When we see something, a color is presented; when we hear something, a sound; when we imagine something, a fantasy image. In view of the generality with which we use this term it can be said that it is impossible for conscious activity to refer in any

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way to something which is not presented. When I hear and understand a word that names something, I have a presentation of what that word designates; and generally speaking the purpose of such words is to evoke presentations (Ibid: 198).

In Brentano's formulation, a judgment does not consist of the combination of a subject and a predicate; rather, a judgment is defined as the act of accepting or rejecting a presentation. Presentations are the content of judgments. Brentano's system was a new and radical theory of judgment, which represented a drastic departure from the Aristotelian theory of judgment.

Brentano's proposal put the existential proposition on a new perspective: if a judgment is essentially the acceptance or rejection of a presentation, then the existential proposition acquires all the credentials of a proper judgment. In this respect, Brentano started by clarifying that, in traditional logic, the existential proposition cannot be considered as a proper judgment:

> When we say, "A exists," this sentence is not, as many people have believed and still do, a predication in which existence as predicate is combined with "A" as subject. The object affirmed is not the combination of an attribute "existence" with "A" but "A" itself. By the same token, when we say, "A does not exist," there is no predication of the existence of "A" in a negative way – no denial of the conjunction of an attribute "existence" with "A." On the contrary, "A" is the object we deny (Ibid: 208).

On the other hand, the consideration of the existential proposition as a proper judgment is perfectly viable in Brentano's theory of judgment. Furthermore, in his theory, existentials are not merely an instance of proper judgments, but constitute the basic form of judgment:

> …when someone affirms a whole, in so doing he affirms each part of the whole as well. So whenever someone affirms a combination of attributes he simultaneously affirms each particular element of the combination. In affirming the existence of a

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learned man, i.e. the combination of a man and the attribute "learned," he affirms the existence of a man in so doing (Ibid: 208).

Thus, in Brentano's system, all predications are formulated as existential propositions: "The categorical proposition, 'Some man is sick,' means the same as the existential proposition, 'A sick man exists,' or, 'There is a sick man'" (Ibid: 214). In the case of universal judgments, they are rendered as negative existential propositions; hence, *All men are mortal* is rendered as *An immortal man does not exist* or *There is no immortal man.* Brentano extends the existential formulation even to hypothetical judgments:

> The proposition, "If a man behaves badly, he harms himself," is a hypothetical proposition. As far as its meaning is concerned, it is the same as the categorical proposition, "All men who behave badly harm themselves." And this, in turn, has no other meaning than that of the existential proposition, "A man who behaves badly and does not harm himself does not exist," or to use a more felicitous expression, "There is no such thing as a man who behaves badly and does not harm himself." IN VIEW OF THE CLUMSINESS OF THE EXPRESSION IN ITS EXISTENTIAL FORM, IT IS EASY TO SEE WHY LANGUAGE HAS FOUND OTHER SYNTACTICAL EXPRESSIONS. But the difference between the three types of proposition is merely a difference in linguistic expression, although the famed philosopher of Königsberg was misled by such differences into assuming fundamental differences of judgment and basing special *a priori* categories upon these 'relations of judgments' (Ibid: 218; emphasis added).

The last statements in the quotation above are also significant because they illustrate Brentano's conception of the relationship between logic and linguistic form. Brentano did not consider linguistic representation to have any relationship with logical function. This is clear in his critique of Kant in the quotation above.

For Brentano, existential judgments are the more basic type of judgment. Nevertheless, they do not constitute the only kind of judgment. Brentano acknowledges the existence of another type of judgment: the 'double judgment' (*Doppelurteil*):

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one part of which affirms the subject, and, after the predicate has been identified in presentation with the subject, the other part affirms the subject which had been affirmed all by itself by the first part, but with this addition – which is to say it ascribes to it the predicate P (Ibid: 295).

An example of a double judgment is the proposition *This flower is red,* because in this case we are first positing the existence of the flower and then we ascribe to it the property of being red. For Brentano, the double judgment is the only genuinely predicative or categorical judgment (Ibid: 305n.) — that is, the double judgment is the only type of judgment that consists of the union of a subject and a predicate instead of merely being an existential proposition.

A disciple and collaborator of Brentano, Anton Marty, continued Brentano's logical formulations, adding to them an interesting linguistic twist. In contrast to Brentano's rather indifferent position towards linguistic facts, Marty had a vivid interest in language. Among other philosophical enterprises, Marty investigated the linguistic correlates of Brentano's mental phenomena. Like Brentano, Marty divides psychical activities into three classes: 1) presentations; 2) judgments (i.e. 'accepting' or 'rejecting' a presentation) and 3) taking an interest (this corresponds to Brentano's 'phenomena of love and hate'). Marty argued that each of these classes had a linguistic correlate: names and other words are the correlate of presentations; statements are the correlate of judgments and "interest-demanding expressions or emotives" (Marty 1906/2010: 301) are the correlate of stances of interest.

In order to explain the linguistic correlates of mental phenomena, Marty borrowed from Humboldt the concept of 'inner linguistic form' (*innere Sprachform*). However, Marty's use of the concept is rather different. As it is well known, Humboldt coined this

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concept to describe how languages represent a particular *Weltanschauung*. In contrast, Marty gave the concept a more restricted scope. "According to Marty's conception, it is not language as a whole which has an inner linguistic form; rather, it is in each case A PARTICULAR LINGUISTIC EXPRESSION which has this" (Rollinger 2010: 77-78; emphasis added)

A linguistic structure can be misleading regarding the concept it signifies, as in the case of metaphor. Marty states that even grammatical structures can be misleading — including the subject-predicate structure.

> Marty frequently speaks of fictions in connection with constructive inner linguistic forms. Such a way of describing them need not be pejorative, but it is obviously frequently so. A case in point is the subject term of impersonals. When someone says that it is raining, for instance, the suggestion is made by such a linguistic construction that there is something that is raining. Hence, various philosophers have gone on a wild goose chase speculating about what it is which is raining, snowing, etc., whereas the sentences in question only tell us that certain occurrences, such as raining or snowing, exist. Another instance of a linguistic fiction would be suggested by the subject-predicate form, which of course is hardly to be dispelled from language, but frequently misleads philosophers into thinking that there is a substance-accident relation in cases where there is in fact none (Ibid: 79).

In other words, Marty considers that a correspondence exists between linguistic form and logic function, but only at the level of the inner linguistic form, because in its apparent structure, language is rather misleading (e.g. it forces us to see a subject-predicate relationship when there is none). It is not surprising that this formulation attracted the attention of a student of Chomsky, S. Y. Kuroda, who attempted to apply Marty's ideas to linguistic analysis (see §2.1.2).

Marty argues that, although language is the vehicle for thought, the linguistic form can be misleading and thus it becomes necessary to discern the inner linguistic form

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(i.e. the true meaning) from the apparent one in order to recognize the real structure of judgments in the linguistic form.

In their respective formulations, neither Brentano nor Marty distinguish between the existential and the thetic statement, but rather use both concepts as synonyms. Marty uses the label 'thetic judgment' (*thetische Urteil*) more than Brentano, who prefers the label 'existential propositions' (*Existentialsätze*).

Like Brentano, Marty considered only the double judgment as truly categorical. For example, the proposition *All the apostles are Jews*, expresses a double judgment because it first acknowledges the existence of the apostles and then ascribes to them the condition of being Jews. All other judgments, in agreement with Brentano's theory, are regarded by Marty as thetics. As previously mentioned, Marty uses the concept of 'inner linguistic form' to explain how it is possible for a thetic judgment to have the form of a categorical judgment.

Brentano and Marty's thetic logic, however, did not prosper. The mathematical turn in logic, propelled by authors as Frege and Russell, was the dominant orientation in the 20th century, and thus Brentano's system of logic was virtually forgotten (Martin 2010: 399).

2.1.2 The Thetic Judgment in Linguistics

Although Brentano and Marty's thetic logic was relegated to the history of philosophy, it has acquired in linguistics a renewed status thanks to the work of Kuroda (1972b) and Sasse (1987), among others. In fact, it is common that studies on theticity cite Brentano and Marty as important precursors. Nevertheless, several years before Kuroda's work,

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Marty has already influenced linguistics through the Prague School in several ways[11] —

Marty was a renowned professor in Prague. In respect to Marty's theory of judgment, it

influenced Mathesius' concept of sentence:

> What makes a sentence a sentence is the active attitude of the speaker to its
> content. According to our previous research the sentence can thus be said to be a
> communicative utterance by which the speaker assumes an active attitude to some
> fact or a group of facts… In declarative sentences this active element appears as
> *assertiveness*, which is either *thetic* (in one-part sentences), i.e. *a* SIMPLE
> PRESENTATION OF AN EVENT OR ACTION *prší* 'it is raining', *bylo tma* 'it was dark'
> or predicative (in subject-predicate sentences), i.e. an assertive connection of the
> enunciation with the theme (*and the king had a beautiful daughter*) (Mathesius
> 1929/1983: 124; emphasis added).

Notice that Mathesius' definition of sentence contains traces of the Brentanian

division between a thetic judgment and a double judgment.

Being apparently unaware of the developments of the Prague School based on

Marty's works, the Japanese linguist S. Y. Kuroda published in 1972 two papers related

to the work of Marty focused on the thetic-categorical distinction. One of these articles

(Kuroda 1972a) is a rather dense essay that aims to compare Marty's analysis of the

'inner linguistic form' to the 'deep structure' of generative grammar.[12]

Much better known and more influential, the second article explains the contrast

between Japanese particles *wa* and *ga* as an instance of the thetic/categorical distinction

as elaborated in Marty's writings. The following is one of Kuroda's examples:

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[11] For an account of the influence of Marty on the Prague School see see Belohlavek and
Klir (2011).

[12] By his own account, we know that Kuroda came across Marty's philosophy rather
incidentally (Kuroda 1990).

(3) a. Inu *ga* hasitte   iru
        Dog   running   is
   b. Inu *wa* hasitte   iru
        Dog   running   is
        'The/A dog is running'

Kuroda's explains example (3a) as follows: "One notices an event of running; an act of running necessarily involves the actor of the action, and this actor being recognized as a dog is referred to by the word *dog"* (1972b: 162). In other words, (3a) can be regarded as an instance of a thetic judgment that can be rephrased as 'there is a dog running'.[13] On the other hand, in example (3b), the particle *wa* introduces the dog as a definite entity: hence, in this context, the existence of the dog has been previously established. Kuroda finds a parallel between this configuration and Brentano and Marty's double judgment.

> In the definite referential act, the identity of the individual entity to be named has been established in the speaker's mind prior to this act. (The speaker must also believe that the same is the case for the hearer). The speaker's interest is directed towards this particular individual entity proper, differentiated in his mind from all other individual objects. When he uses a noun phrase as a name for this individual entity, he might choose a characteristic property that serves in the given context to distinguish it from all the other individual objects (Ibid: 166).

The definite referential act is a thetic judgment in Brentano and Marty's sense. Therefore, Kuroda considers the sentence with *wa* as an instance of the double judgment, namely, formed by two presentations: the dog and the act of running ascribed to it.

Moreover, Kuroda also notices that *ga* is used in Japanese for expressing weather conditions —an important thetic subtype, see §1.1 and §2.1.4.

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[13] This specific rephrasing as an existential proposition is proposed in Kuroda (1990).

(4) yuki   **ga**   hutte iru
    snow   rain   is
    'It is snowing' (Ibid: 181)

On the other hand, Kuroda notices that Brentano and Marty's theory of judgment does not really find a complete correspondence in the linguistic facts. Specifically, he observes that universal judgments do not correspond to a thetic representation in Japanese, but rather to a double judgment representation (i.e. a topic-comment construction using *wa*). Consequently, Kuroda argues against Brentano's conception of the universal judgment as thetic, and advocates for a definition of 'categorical' more in agreement with the linguistic facts. Hence, Kuroda proposes to regard universal judgments as instances of Brentano's double judgment.

> We can assume that the categorical judgment consists of the act of setting up an object in one's mind and the act of affirming or denying the predicate of that object. However, the kind of object that may be set up in one's mind need not be an individual object, nor some entity grounded on real objects; the act of setting up an object in one's mind may not be similar to the thetic judgment of the existence of some real entity. We can rather take the idealistic or rationalistic standpoint and assume that an 'idea' (or 'intentional meaning') may be set up in one's mind as the subject of a categorical judgment, of which the predicate is affirmed or denied (Ibid: 182).

Therefore, according to Kuroda, a universal judgment such as *All men are mortal* should be rendered as a combination of two thetic judgments: *There are men* and *They are mortal,* instead of as an isolated thetic judgment (i.e. *There are not immortal men,* in Brentano's formulation).

In a later paper (1990), Kuroda examined the thetic judgment from a cognitive standpoint. He argued against the reduction of the thetic judgment to an existential proposition, and proposed that thetic judgments rather express a very transient perception of a situation.

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What existence is involved in the thetic judgment (3a), then? A dog is running. There is an actual situation perceived and a dog is involved. A dog is recognized in this perception. But if the perception is all there is, I would maintain that no act of real predication can arise. Assume that a moment later we again have a perception, and a thetic judgment, a dog is running. If these perceptions are all there are, there is no connection between two entities perceived as a dog in them, even if one can say from some objective point of view that one and the same dog is involved in these perceptions. We have a perception and it goes away, and another comes and goes away, and so on. An entity recognized as a dog is involved in each of these perceptions; the existence of a dog is recognized in each thetic judgment corresponding to them. But as far as such perceptions are taken discretely in isolation, no substance can be apprehended that can be said to subsist beyond the confines of each perception, subsist in a time continuum in a relevant sense (Ibid: 84).

In other words, Kuroda suggests that the cognitive motivation for the thetic judgment is grounded in our continuous, transient perceptions of our environment, rather than in an abstract concept of 'existence'. One interesting aspect of this conception is that it is opposite to accounts regarding theticity as a phenomenon related to attention — as authors such as Lambrecht (1994) suggest, see below. For Kuroda, it is not attention, but perception, which is the cognitive motivation of the thetic judgment.[14]

An alternate account of the *wa/ga* problem was that of Kuno (1972), who suggested to regard *wa* as a topic marker, and *ga* as "a marker that indicates that the subject represents new, unpredictable information in the sentence" (Ibid: 283). Kuno labeled this configuration as 'neutral description', and argued that it occurs after the question *what happened next?* Being more general[15] and simpler, Kuno's analysis gained acceptation among scholars and the thetic/categorical distinction did not prosper at the

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[14] This argument was further developed in Kuroda (2005).

[15] In his seminal paper, Kuroda stated that he was only addressing ONE ASPECT of the *wa/ga* distinction (1972b: 183).

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time as a linguistic concept. However, until the end of his career, Kuroda maintained that the thetic/categorical distinction provided a better solution to the *wa/ga* problem.[16]

In spite of having investigated the thetic statement in several papers, Kuroda never described the thetic subtype known as the hot news statement —exemplified in example (1b), *The POPE died.* It was Sasse (1987) who related this construction, with its peculiar prosodic pattern, to theticity. This was an interesting solution to an old problem which, to my knowledge, was first described in Bolinger (1954). In this article, Bolinger observed some restrictions of this construction. The prosodic pattern can be applied to sentences in (5), but it does not work that well for sentences in (6). In both sets, the examples are supposed to be reasonable answers to the question: *Why didn't she come to work today?*

(5) a. Her HUSband is sick
    b. Her HUSband is to blame.
    c. Her HUSband died.
    d. Her HUSband is responsible.

(6) a. Her husband made a SCENE.
    b. Her husband fell of a LADDER.
    c. Her husband broke his NECK.
    d. Her husband had an ACcident.
    e. Her husband is in JAIL.

Why does the prosodic stress fall on *husband* in examples in (5), but not in examples in (6)? Bolinger suggests that the reason is found in the extraordinary character of the later examples. "The point where information is concentrated therefore shifts —

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[16] See Kuroda (2005), in which the author proves that *wa* does not function as a topic marker in all instances. In this later paper, Kuroda associates theticity with perceptions and, in a more abstract level, with the apprehension of perceptions as abstract situations (Ibid: 32).

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'husband' is easier for the hearer to infer than is 'fell off a ladder', and prosodic stress now moves away from the relatively to-be-expected 'husband' to the relatively not-to-be-expected 'fell off a ladder'" (Ibid: 152-53). On the other hand, examples in (5) are more typical excuses for absences, and thus —he argues –*husband* becomes the more relevant piece of information in those cases. Thus, from the beginning, Bolinger associated this construction with the addressee's expectations.

In a further development of his theory, Bolinger (1972a) proposed that the prosodic accent is related to the unpredictability of information, especially regarding the semantics of the elements implied. For instance: "Less predictable verbs are less likely to be deaccented" (Bolinger 1972a: 634).

In a classic article, Chafe (1974) examined the same construction along with other similar constructions that convey new information. First, Chafe compares sentences in (7), which present new information but do not contain a specific noun, with those in (8), in which only the noun is high-pitched —even if the verb conveys new information.

(7) a. It's RAINING.
   b. They're COMING.
   c. He BROKE it.

(8) a. He broke the GLASS.
   b. He's sitting in the CAR.

Chafe observes that the situation becomes even more complex if the noun precedes the verb. In the following examples, both noun and verb receive high pitch, because both convey new information:

(9) a. MARY is SINGING.
   b. My SISTER is DYING.
   c. The BUTTER MELTED.
   d. The SHIP SANK.

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In addition, Chafe examines the following examples, which are similar to Bolinger's:

(10)   a. The BRITISH are coming.
        b. My SISTER died.
        c. The BUTTER melted.
        d. The SKY is falling.

Chafe explains the difference between sentences in (9) and (10) with the notion of 'conceptual unity', that is, the noun-verb combinations in examples in (10) form a conceptual unity that is not found in the sentences in (9).

> E.g., if we compare (9b) and (10b), the relationship of 'my sister' to 'death' has not been established as a unit in the speaker's mind at the time she is dying; but after her death, he will have come to think of the event as a single idea. In (9c), as a rather different kind of example, the concepts 'butter' and 'melt' have not coalesced to form a conceptual unit; but in (10c) one might say that there is a single concept 'butter-melt', an instance of which is said to have occurred. This notion of conceptual unity, although it obviously needs further investigation, may prove useful in explaining a variety of linguistic phenomena (Ibid: 115).

The notion of conceptual unity clarifies some of Bolinger's examples. Thus, the prosodic stress on *husband* in examples in (5) could be due to the viability of the phrases as conceptual unities, whereas this is not the case for examples in (6) because of the unpredictability of the predicates.

However, Schmerling (1976) challenged Bolinger's argument about the unpredictability of information as a reason for the prosodic contour exhibited in examples in (5). In fact, Schmerling presented an interesting pair of real-life counterexamples:

(11)   a. Truman DIED.
        b. JOHNson died.

The context of each utterance motivated the dissimilar intonational contour of both sentences. The first example occurred after Truman's hospitalization in critical

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condition. There were daily reports of his health given in the media. "Because of the seriousness of Truman's condition and his advanced age, it could reasonably be assumed that he would not survive this crisis and that it was just a matter of time before he would die" (Ibid: 41). It was in this context that (11a) was uttered. On the other hand, (11b) came as a rather unexpected announcement. Johnson's health had been in the news because of a previous heart attack, but he was seemingly recovering. Thus, his death came more as a surprise.

> What is significant for the present discussion [i.e. Bolinger's theory of stress] is the difference in the contexts in which these reports were uttered: Truman's death was expected; Johnson's was not. Bolinger's theory would appear to suggest, however, that the mention of Truman in the relevant context should have suggested "death" and, therefore, that *died* in (11a) should not be stressed. On the other hand, the mention of Johnson in the relevant context should not have suggested "death" any more than anything else one might have wanted to say about him, and therefore *died* in (11b) SHOULD not be stressed. Bolinger's theory would thus appear to predict stress contours opposite to the ones which actually occurred (Ibid: 42; emphasis in original).

Thus, Schmerling observed that the linguistic facts contradicted Bolinger's proposed correlation between unexpectedness and prosodic accent. In any case, the pattern illustrated by Schmerling seemed to be opposite to that proposed by Bolinger: unexpectedness was the trigger for this specific intonational contour.

In order to solve this problem, Schmerling suggested that sentence (11a) has a topic-comment structure because it is an affirmation about a subject who is already present in the mind of the addressee. On the other hand, (11b) does not have a topic-comment structure because it does not merely convey information about a previously established topic, but rather refers to "an entire event or state of affairs" (Ibid: 93).

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The German linguist Hans-Jürgen Sasse related Schmerling's analysis to Kuroda's thetic/categorical distinction in an article published in 1987, which became one of the most important works on theticity. Previously, at least two other investigations had applied the thetic-categorical distinction to the analysis of linguistic facts: Sasse (1984) described the thetic/categorical distinction in Boni, whereas Ulrich (1985) is a monograph on theticity with a major focus in Romanian.

Sasse (1987) is a typological survey attempting to explain the thetic-categorical distinction from a typological perspective. Sasse cites the work of Kuno and Kuroda, explaining the difference between their approaches:

> The fundamental difference between all these characterizations, from 'neutral descriptions' to 'sentence focus', and the thetic/categorical theory resides in the fact that the former are based on the idea that the differences in syntactic structure between 'neutral descriptions' and 'theme-rheme' (= 'topic-comment') utterances can be derived directly from information structure, that is, from the distribution of old/given and new elements in a sentence, while the latter assumes that this is not the case. Advocates of the 'neutral description' theory seem to maintain (with minor individual modifications) that if in a given sentence both the (grammatical) subject and the (grammatical) predicate are contextually unbound it will have the 'neutral description' structure, while if the subject is given the sentence will have the theme-rheme (or topic-comment) structure. The thetic/categorical theory, on the other hand, is based on the assumption of two fundamentally different types of statement, which operate independently of criteria of information structure (given/new) (Ibid: 516-17).

In his article, Sasse regrets that Kuno's approach has received more attention than Kuroda's theory. Furthermore, Sasse criticizes Kuroda for having expressed his ideas in a rather obscure manner and having looked for "EVIDENCE FOR A PHILOSOPHICAL THEORY IN NATURAL LANGUAGE instead of analyzing language in linguistic terms" (Ibid: 17; emphasis in original). According to Sasse, Brentano and Marty's theory merely

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constitutes a starting point, and we must not expect an exact correspondence between this theory and the linguistic facts.

In this article, Sasse maintains that the thetic/categorical distinction is not a matter of information structure, but rather a matter of what he calls 'communication perspective'.

> The thetic/categorical distinction will be shown to reflect two different points of view from which a state of affairs can be regarded. These are universally reflected in sentence structures in a way as basic to the syntax of human languages as, say, the distinction between declarative, interrogative and imperative sentences. Such points of view are aspects of what we may call *communication perspective,* that is, the general shape a speaker gives the state of affairs which he is about to convey in a given sentence. COMMUNICATION PERSPECTIVE THUS RELATES TO THE SENTENCE AND DIFFERS FUNDAMENTALLY FROM INFORMATION STRUCTURE, WHICH RELATES TO THE TEXT (Sasse 1987: 518; emphasis added) .

Sasse's last statement is controversial since nowadays not all authors agree that information structure pertains to the discourse level and not to the sentence. However, with this statement, Sasse establishes a distinction that the late Kuroda also maintained: the thetic/categorical distinction pertains to the sentence level, whereas concepts such as focus, topic, comment and new information pertain to the discourse level (Kuroda 2005).

In his article, Sasse discusses Schmerling's examples cited in (11) and stresses that the collocation of the prosodic accent in these cases does not really depend on "the entitiy's conveying new information or its being contextually established" (Sasse 1987: 523).

> …it is not the entity's degree of givenness which makes the difference, but THE BACKGROUND OF EXPECTATION which embraces the entire information rather than merely the entity… [example (11a)] presupposes expectation of information about what happened rather than about Johnson, but [example (11b)] presupposes expectation of information about Truman's condition rather than about what happened (Ibid: 523; emphasis added).

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In other words, the thetic/categorical distinction does not pertain to the discourse level because it does not depend on the information being new, but depends on the background of expectation that the speaker assumes with respect to the addressee. It is as if in uttering a thetic statement, the speaker had the question *what happened?* in mind, whereas in uttering a categorical statement the speaker had in mind a specific question about an already established topic. This background of expectation changes from one sentence to another, and it is thus not a matter of information structure understood as a discourse-level phenomenon.

Thus, according to Sasse, the thetic/categorical distinction is better explained with reference to the act of predication. Specifically, this distinction establishes a contrast between a predicative and a non-predicative assertion. The structural diversity of thetics is caused by the marking of the sentence as non-predicative since "all languages can be shown to use strategies to diminish the grammatical predicativity of thetic sentences by nominalization, incorporation, intonation, and similar devices which blur the strict subject-predicate division of corresponding categorical sentences" (Ibid: 519). Sasse supports this claim in his article by presenting a crosslinguistic survey of thetic sentences. The common denominator of the thetic formal strategies is that they seem to deviate from the prototypical categorical sentence. Following is a brief description of the thetic strategies that Sasse found:

1) Subject-accented sentences: only the subject receives the prosodic accent whereas the predicate is deaccented, as in *JOHNson died*.

2) Subject inversion. Sasse shows that this is a fairly common strategy for forming thetic sentences in Romance as well as other languages. For example,

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Spanish *En ese momento, entró un soldado* 'At that moment, a SOLdier came in'.

3) 'Split structures' as in French *Il y a un tuyau qui fuit* 'There is a pipe leaking'. Sasse includes in this category all structures that separate the subject from the predicate by using a syntactic construction that differs from the prototypical categorical construction in the language.

4) Incorporation. Sasse uses this concept in a general sense, involving not only proper incorporation but also those syntactic devices that seem to combine the subject and the predicate in a single structural unit. In this sense, this strategy can be regarded as the opposite of strategy 3. For example, Boni uses subject incorporation in intransitive verbs to form thetic expressions. Example (12a) is a categorical statement, whereas example (12b) is thetic.

(12)   Boni (Afro-Asiatic, Cushitic)
        a. áddi̱gée̱-é   juudi.
           Father-my- FOC   died
           'It is my father that died'.
        b. áddi̱géeê̱   i̱uudi.
           Father-my^ died
           'My FAther died' (Ibid: 546).

Sasse explains the opposition between thetic and categorical sentences as an opposition between utterances which are logically analyzed into two successive mutually related judgments, one naming an individual and one naming an event (categorical statements), and utterances in which the logical relations between the various parts of the communicated state of affairs remain unanalyzed (thetic statements). "A predication is a statement ABOUT an entity, that is, a statement which does not merely assert some fact as

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such but presents some fact as a PROPERTY ASCRIBED TO AN ENTITY" (Ibid: 554; emphasis in original).

In order to explain the difference between thetic and categorical statements, Sasse proposes the concept of 'predication base'. According to him, thetics lack a predication base: they can have a grammatical subject, but their subjects are not topics.

> Any sentence that expresses a predication must have a predication base: it must refer to an entity … If the utterance lacks a predication base the state of affairs is simply posited ('recognized', as Marty would say). An entity that may happen to be involved in the state of affairs so asserted may not be picked out as the predication base but is presented as part of the event; hence it need not be expressed by a referential element. While an entity serving as a predication base is always autonomous, that is, independent of and OUTSIDE the predicated event – this must be so since the event is presented as its property– an entity involved in a simple 'recognition' is INSIDE the event and may not be conceived as an entity at all […] 'Recognition' and predication are two different types of ASSERTION. (Sasse 1987: 555; emphasis in the original)

In Sasse's terms, thetic statements do not present the bipartite structure of categorical statements, but integrate the grammatical subject as part of the event, which is then seen unanalyzed, as a whole.

To sum up, for Sasse, thetic statements form only one information unit, whereas categorical statements split the state of affairs into two different information units. It selects one of the participants of the state of affairs in order to present it as a predication base and arranges the rest in such a way that it forms the predication. We thus utter categorical statements at those points of the discourse where information is built up in successive bits (Ibid: 558).

Sasse adds that the thetic-categorical distinction comprises several pragmatic and discourse functions that go beyond the information structure configuration of all-new sentences. He enumerates the following:

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1. Existential statements (presence, appearance, continuation, etc.)

2. Explanations (e.g. responses to the question *what happened?*)

3. Surprising or unexpected events.

4. General statements (aphorisms, etc.)

5. Background descriptions.

6. Weather expressions.

7. Statements related to body parts.

In addition to these functions, Sasse establishes a major division among thetics between event-central and entity-central statements, according to the reference to an entity or an event, respectively. For example, *There are some bananas* is an entity-central statement, whereas *It's raining* is an event-central statement.

Sasse and his collaborators continued the research on theticity from a typological perspective. A major result of this project were the articles published in Matras and Sasse (1995), whose results Sasse surveyed and discussed thoroughly in a subsequent article (2006). Rather surprisingly, in this later work Sasse maintains a skeptical position regarding the existence of theticity as a unitary linguistic phenomenon

In this article, Sasse describes some of the thetic devices already surveyed in Sasse (1987) but focusing in more detail on specific languages, which are selected from the studies in Matras and Sasse (1995). Also, Sasse (2006) presents an updated version of the previous classification of thetic functions:

1) Annuntiative: this function refers to 'out of the blue' statements, common in newspaper headlines. For example, *MIchael JACKson died'*. It also includes bodily conditions such as *My HEAD hurts*.

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2) Introductive: this function refers to the first mention of a subject in order to introduce it as topic (i.e. a presentative function). This function includes existentials.

3) Interruptive: this function refers to sudden events that interrupt the current discourse line such as the phone ringing or the appearance of something.

4) Descriptive: for example, environmental conditions that are presented as a background of the main storyline.

5) Explanative: the event is given as an explanation of a state of affairs. The utterance can be a proper response to the question *what happened?*

Notice that this new classification is more discourse-oriented –in contrast to the more sentence-oriented classification presented in Sasse (1987). This change of orientation from the clause to the discourse might be due to the clear shift in Sasse's theoretical perspective: he does not regard theticity as a unitary phenomenon anymore, but merely as a conglomerate of "similar presuppositional/assertional conditions prevailing in similar semantic areas, which are frequently expressed by comparable constructions in different languages" (Sasse 2006: 300). According to Sasse, the common denominator of these semantic areas is the domain of existence, either dynamic or static.

Moreover, Sasse does not support a straightforward thetic-categorical distinction anymore, but considers theticity as opposed to "a variety of other constructions which are not easily subsumed under a label of 'categoricality'" (Ibid: 300). For example, thetic constructions in which theticity is marked by a focus structure can contrast with non-thetic focus constructions.

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Also, Sasse argues that the low presuppositionality criterion (i.e. the consideration of thetics as 'out of the blue' statements) is only a necessary, but not a sufficient condition of theticity. He proposes that thetics are also "connected with an additional act of assertion which explicitly signals the low presuppositionality of the state of affairs expressed, something like 'look out, addressee, an assertion is being made that adds a new situation to your presuppositional funds'" (Ibid: 300). In other words, it is not only that thetics convey unexpected information, but also that this information is explicitly designated as non-presupposed.

An investigation that agrees with Sasse's new perspective with respect to theticity is Matić (2003), which describes the use of VS order in the Balkan languages. Matić atributes the use of the VS order to several factors, mainly related to the meaning of the elements involved. He argues that VS order in these languages is triggered either when the grammatical subject does not correspond to a typical topic, or when the topic cannot be encoded as subject. According to Matić, the conditions that trigger VS order in these languages cannot be attributed to theticity.

> Now, the final question. Do the properties of vS in [Albanian, Modern Greek and Serbo-Croatian] presented in this study justify the idea that there is a primitive, nonanalyzable category of thetic statements, placed on the level of cognition, or on the level of discourse pragmatics? The answer is unequivocally no. vS clauses are a language specific solution for a mismatch between the grammatical structure and the needs of the discourse in certain contexts. The semantic, pragmatic, informational, etc., features which have been assumed to be the *differentia specifica* of thetic statements turn out, on the analysis proposed in this study, to be merely a consequence of the assertional structure of this particular clause type […] the real home of 'theticity', i.e. of the meaning conveyed by vS, is the interface of information structure, discourse and the lexicon (Ibid: 474).

Lambrecht (1987; 1994) developed an alternate approach to theticity, more independent from the thetic/categorical distinction defended by Kuroda and Sasse.

Lambrecht (1987) begins by distinguishing two main constructions in declarative sentences: the predicate-focus and the subject-focus construction. In the predicate-focus construction, the subject is already activated and only the predicate is new, thus the subject is the topic and the predicate is the comment (i.e. the predicate constitutes new information with respect to an already established topic). This configuration corresponds to the categorical judgment in Kuroda and Sasse's approach. On the other hand, the subject-focus construction has basically two different interpretations: a narrow-focus and a sentence-focus reading. In the narrow-focus reading, the predicate is already presupposed, and only the subject constitutes new information (e.g. *CLAIRE is giving the speech, not Martin*). In contrast, the sentence-focus construction has a presentational character: it introduces a previously inactivated entity into the discourse. Consequently, predicates that support the introduction of a referent or that are related to changes of state are more likely used in sentence-focus constructions. Compare examples (13a) and (13b).

(13)   a. JOHN came / left / called / died / disappeared / is sick
           b. *JOHN ate / studied / loves Mary / bought a book

According to Lambrecht, only sentences in (13a) can have a sentence-focus reading, whereas sentences in (13b) only have a narrow focus reading.

> Indeed, when I say *JOHN called*, I do not wish to inform my addressee of some property of John; rather I introduce John to my interlocutor's awareness by mentioning the phone call. Similarly, in its preferred reading at least, the SF [sentence focus] sentence *JOHN's sick* conveys the information that John has *become* sick recently, or has entered a state of sickness, not that he has been sick for a while or that he is always sick (Ibid: 374).

Lambrecht also cites Schmerling's examples in (11) and analyze them as a contrast between activated and inactivated referents. Example (11b) uses a sentence-

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focus construction because Johnson was not an activated referent –in contrast to Truman in (11a).

In terms of the thetic/categorical distinction, the predicate-focus construction corresponds to the categorical statement, whereas the sentence-focus construction corresponds to the thetic statement.

In a subsequent work (1994), which has become a fundamental reference for the study of information structure, Lambrecht elaborates more on the sentence-focus or thetic construction. On the one hand, he expands his definition of the sentence-focus construction by acknowledging that sentence-focus constructions are not only capable of introducing entities but also events. In this respect, Lambrecht borrows from Sasse his classification of thetics into event-central and entity-central statements (Sasse 1987; see above). The event-central construction merely reports an event whereas the entity-central statement introduces an entity in the discourse —and hence it is properly presentational. These entity-central presentational sentences are subsequently divided into deictic and existential. Existentials are those sentences that merely assert the existence of an entity, whereas deictic are those sentences that introduce the entity without asserting its existence. Lambrecht's classification of thetics is summarized in Figure 1.
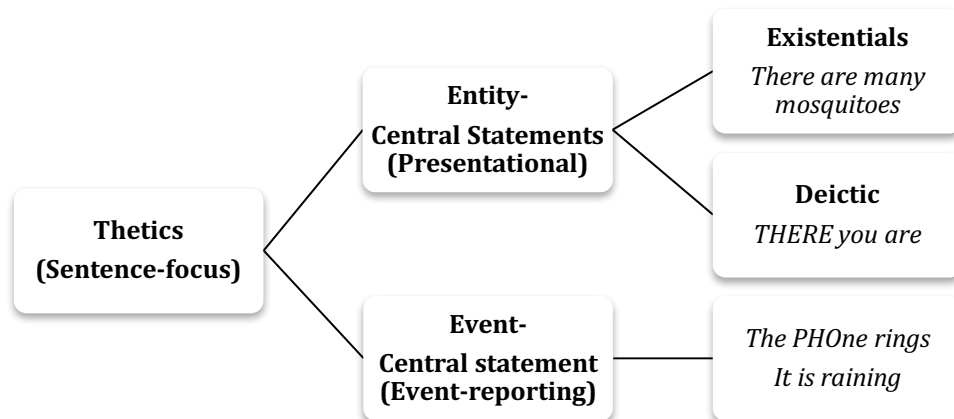
Figure 1: Lambrecht's classification of thetics**.**

To sum up, according to Lambrecht, entity-central thetics basically introduce new topics in the discourse, whereas event-central thetics have a more limited function of presenting new situations. Let us illustrate the difference between entity-central and event-central thetics in this respect with the following examples.

The utterances from English, Italian, French and Japanese in (14) are deictic presentationals because they can be used to introduce the referent 'John' into the discourse.

(14) a. JOHN arrived.
      b. E arrivato GIOVANNI
      c. Y'a JEAN qui est arrivé.
      d. JOHN ga kita.

In contrast, the utterances in (15) do not introduce a topic, although they are structurally similar to those in (14). The reason for this is that they "do not serve to introduce the telephone as a referent into the discourse. Rather they serve to announce an

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event of ringing, in which the telephone is merely a necessary participant" (Lambrecht 1994: 144).

(15) a. The PHONE's ringing!   (subject accentuation)
      b. Squilla il TELEFONO!   (subject-verb inversion)
      c. Y'a le TELEPHONE qui SONNE   (*y'a*-clefting)
      d. DENWA ga NATTE iru yo!   (*ga*-marking)

Notice that, in any case, Lambrecht considers the sentence-focus or thetic construction as a phenomenon directly linked to attention. In uttering a sentence-focus sentence, the speaker aims to call the addressee's attention either over a new entity or a new state of affairs. As was already mentioned, this account is opposite to Kuroda's formulation of the thetic judgment as motivated by (transient) perceptions. We will return over this issue in §7.1.

According to Lambrecht, the topic-comment construction (i.e. the categorical statement) is the most common information-structure configuration. This is noticeable in English because of the strong correlation between subject and topic –that is, given the absence of a specific context, speakers tend to interpret SVO sentences as topic-comment instead of as thetic. Based on this psychological evndence, Lambrecht suggests that the topic-comment structure is the unmarked reading of sentences, and the thetic or subject-focus structure is more marked.

> It is more common for speakers to convey information about given discourse entities than to identify arguments in open propositions [i.e. narrow focus structures], to introduce new entities in the discourse, or to report events out of the blue. Strong empirical evidence in favor of this assumption can be found in the fact that in coherent discourse the overwhelming majority of subjects are unaccented pronouns, i.e. expressions which indicate topic continuity across sentences […] The topic-comment articulation is then communicatively speaking the most USEFUL pragmatic articulation. It is therefore the one to which speakers will most naturally resort for the pragmatic construal of isolated sentences (Ibid: 132; emphasis in original).

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In a more recent article, Lambrecht (2000) elaborates on the marking of subjects as non-topics in thetic constructions. He describes the following crosslinguistic strategies for marking the subject as a non-topic (Ibid: 625):

1) Prosodic prominence (e.g. prosodic inversion).

2) Specific linear position relative to the verb (e.g. syntactic inversion).

3) Co-occurrence with 'focus particles'.

4) Absence of grammatical agreement with the verb.

5) Non-nominative case marking.

6) Single constituent status of the verb-object sequence (e.g. incorporation).

7) Constraints on null anaphora.

Moreover, Lambrecht suggests that thetic constructions generally "tend to lack a formal opposition between a subject and an object constituent. This in turn entails that such constructions will tend to lack a syntactic NP-VP bipartition" (Ibid: 627). The subject of thetic constructions "will tend to lack those grammatical properties which are associated with the role of the subject as the topic of a PF [Predicate Focus, i.e. topic-comment] sentence" (Ibid: 627).

Lambrecht concludes: "the driving force in the expression of sentence focus [i.e. theticity] is not iconicity but NON-CANONICITY. The SF subject is coded via a non-canonical pattern" (Ibid: 668; emphasis in original).

Sasse and Lambrecht searched for theticity in grammatical constructions. A different perspective is found in Rosengren (1997), who claims that theticity is not part of grammar, but rather the result of a relationship between two modular components:

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grammar and information structure. Thus, for Rosengren, the thetic-categorical

distinction is not linguistic but extralinguistic.

> Thetic/categorical are actually EXTRALINGUISTIC concepts, standing for two
> different perspectivizations of events: thetic for a perspective where the event is
> looked at as a totally undivided WHOLE, or, more precisely, as a STAGE, that is, as
> one event in a flow of events; categorical for a perspective where an event is
> divided into two parts, one of which is an entity, which is looked upon from the
> point of view of what happens to it or what it is doing. Since we tend to look at
> events as being divided, not as being undivided in this sense, the categorical
> perspective, furthermore, is the default perspective (Ibid: 442).

> Rosengren's less restricted perspective on thetic sentences allows him to consider

some embedded clauses as thetics, as in the following examples (Ibid: 468):

(16) Sie versuchte mich   zu überzeugen, daß   die   FIRma pleite   geht.
      She tried   me   to convince   that   the   firm   bankrupt   goes
      'She tried to convince me that the firm will go bankrupt'.

(17) Man   sach   nichts, außer wenn eine   BOMbe fiel   oder   eine   Mine
      One   saw   nothing except when a   bomb   fell   or   a   mine
      explodierte.
      exploded
      'Nobody saw anything, except when a bomb fell or a mine exploded'.

> In these examples, "the matrix clause serves as an explicit link between the

utterance and the stage perspective" (Ibid: 468).

In summary, Rosengren argues that the thetic/categorical distinction is always

extralinguistically imposed. Hence, it is not part of the grammar of any language but it is

due to a combination of syntactic, lexical and pragmatic factors that trigger the

correspondent thetic or categorical interpretation. In this respect, Rosengren's posture

resembles that of Matić and the late Sasse. On the other hand, Rosengren agrees with

other authors with respect to the thetic perspective being an undivided whole, in contrast

to the categorical perspective, which entails a division between topic and comment.

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2.1.3 Summary and Critical Assessment of the Thetic Judgment

The thetic judgment started as Fichte's formulation of Kant's infinite judgment. In this context it can be defined as the 'absolute positing' of an entity. This concept of absolute positing reached its climax in Brentanian logic, which considered all judgments a matter of acceptation or rejection of something. The work of Kuroda was in some sense the fulfillment of Marty's project of finding the 'inner linguistic form' of the thetic/categorical distinction. Undoubtedly, Kuroda and Sasse's pioneer work made the thetic/categorical distinction an interesting research subject for linguistics.

The conception of theticity as a linguistic phenomenon is not really a controversial issue —all authors seemingly agree with respect to what a thetic statement is. On the other hand, the major controversy relies on the very existence of theticity as a linguistic category. As we have noticed, authors such as Sasse and Matić claim that the structures that convey thetics are too language-specific and thus the comparison with other languages is misleading. Basically, they argue that the concept of thetic function simply vanishes when we look at the language-specific details and the concept is thus exposed as an artificial construct. In fact, to the question: *Is theticity a unitary phenomenon?* Sasse (2006) answers:

> The answer is clearly no. We have found five subtypes of theticity[17], each with its own phenomenological peculiarities. The fact that, in all of the languages examined, most or even all of the five subtypes are relevant for the use of the same formal device does not mean that they are all the same (Ibid: 299).

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[17] This alludes to the discourse-based thetic subtypes proposed in Sasse (2006) reviewed in §2.1.2.

It is true that the use of the same formal device might not mean that the subtypes are exactly the same, but it makes more difficult to deny that they are not part of the same phenomenon. Nevertheless, Sasse argues:

> …it has to be noted that different languages cover different sections of the entire phenomenological domain [of theticity], which means that language-specific investigations which proceed from the form of utterances to single languages are not necessarily comparable from a functional point of view. In other words, IF A "FUNCTION" IS GENERALIZED ON THE BASIS OF A SINGLE LANGUAGE AND THEN TRANSFERRED TO THE ANALYSIS OF ANOTHER LANGUAGE, INADEQUATE INTERPRETATIONS MAY ARISE. For instance, the description of German and English subject-accented sentences and the comparable constructions in French as "all-new" may not be entirely adequate, but is less inappropriate than a description of Hungarian VS constructions in the same terms, even if all of the constructions are used in superficially similar contexts (Ibid: 262; emphasis added).

However, Sasse's argument in this case is flawed: if constructions in different languages cover different sections of the entire phenomenological domain of theticity, there is no reason why we should consider them a priori as separate linguistic phenomena. It is possible that these linguistic phenomena are connected on the general domain of theticity and, if this is the case, we can expect to maximize the possibility of apprehending this phenomenological domain (or conceptual space, or semantic map in terms of typological research) by looking at a large sample of languages. The present research is based on this assumption (see §3.3).

In this investigation, I will adopt a traditional approach to theticity in the sense that I will consider it as an information structure configuration that either introduces an entity in the discourse or points to a state of affairs as a whole (i.e. not establishing a syntactical subject-predicate distinction). Nevertheless, a mere general definition of theticity would not be entirely satisfactory because theticity, as we have seen above, is a

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very diversified function. Therefore, the following section will address the problem of the thetic subtypes, and how they will be considered in this investigation.

2.1.4   The Problem of Thetic Subtypes

This section explains the criteria for considering thetic subtypes for the present research. Research on theticity usually accounts for a variety of thetic functions. Undoubtedly, this variety represents a theoretical and methodological problem by itself. It is thus necessary to clarify what thetic functions will be included in this study and the reasons for their inclusion.

In the literature, some thetic subtypes have had more consensus than others. For example, most authors consider existentials and presentatives to be thetics, and concepts of theticity are often based on these functions. On the other hand, there are some thetic functions that remain less explored. For example, Sasse (1987) includes general statements (e.g. aphorisms) and background descriptions (i.e. descriptions of the scenario in a narrative; e.g. *Silence descended*) in the list of thetics. General statements are not even addressed in Sasse (2006) whereas in this later article background descriptions appear in the same category as weather statements.

Moreover, as was described in §2.1.2, there has been strong disagreement with respect to whether theticity belongs to the domain of the discourse or the domain of the sentence. Kuroda, for example, argued that theticity belongs to the level of the sentence, whereas other authors regard theticity as a discourse phenomenon. I will adhere in this investigation to the first approach, that is, considering theticity as an information-structure configuration identifiable at the sentence-level. As we have seen, this approach

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has not been really contested and offers important advantages for the present study. On the one hand, it does not constrain the data to be discourse-based; on the other hand, it allows a more straightforward comparison, based merely on the sentence level, between thetics, miratives and exclamatives.

This criterion allows the inclusion of the following thetic subtypes, which have been well-established in the literature: existentials, presentatives, hot news statements, climate conditions and physical sensation statements.

On the other hand, the criteria adopted will prevent us from coding background descriptions, which are better suited for discourse-based criteria. Nevertheless, we will not leave this subtype totally aside. Although it will not be in a strict sense included in the data for the main analysis, background descriptions will be discussed in chapter 6.

In the rest of this section, I will present the definitions of the five thetic subtypes that will be coded as part of the data. I will also offer some theoretical considerations with respect to them.

We will start with existentials and presentatives. As was mentioned in §2.1.1, since its origins, the thetic statement was identified with the existential statement. However, not all authors agree with considering all existential statements as thetics. Sasse (1987) proposes to draw distinction between existential assertions and existential predications. He argues that languages usually have a way to distinguish one from another: "I know of no language which is unable to mark the distinction between an utterance that some entity exists, and an utterance about an entity that it exists" (Ibid: 556). This is exemplified in the sentences in (18). Sentence (18a) is an existential assertion, whereas example (18b) is an existential predication, according to Sasse.

(18)   a. There is a God
        b. God exists.

This is, however, a problematic distinction. On the one hand, the evidence presented by Sasse consists only of European languages. On the other hand, such distinction would be almost impossible to trace in reference grammars. In fact, it is not usually the case that reference grammars report a distinction between existential constructions as the one that Sasse proposes. Moreover, more recent work on existentials does not seem to agree with Sasse's optimism regarding the crosslinguistic distribution of this distinction (Creissels 2014). Therefore, it seems that the best methodological decision is to consider all existentials as thetics, which will be the criterion for the present research.

Authors usually regard existentials and presentatives as functionally equivalent. For Lambrecht (1994), both subtypes introduce entities into the discourse (see §2.1.2). Similarly, in his study on nonverbal predication, Hengeveld argues: "The primary function of existential predicates is to introduce the referent of their argument term into the discourse by ascribing existence to it" (Hengeveld 1992: 103). Nevertheless, a careful observation of both functions allows us to distinguish certain differences between them. These differences exist at the syntactic and pragmatic levels. For example, existentials can be negated, whereas a presentative sentence cannot be negated without losing its presentative character –compare (19) to (20). Of course, the last is still grammatically well formed, but it does not have a presentative function.

(19)   There are / there aren't apples in the kitchen.

(20)   a. THERE is John.
        b. # THERE isn't John (cf. John is not there)

Even if example (20b) had a more 'presentative' character as in *Hey, look, John is not here!,* it would still be the presentation of John's absence (i.e. The utterance still would be presenting SOMETHING, a current state of affairs), and not the negation of the presentation of John. In this sense, a negative presentational is a contradiction in terms.

Moreover, existentials can appear in questions, whereas presentatives cannot – compare (21) to (22). We can ask for John's location at any time, and we can even inquire about the existence of John, but these or other similar questions would not really have a presentational sense.

(21)   Are there any apples in the kitchen?

(22)   * Is THERE John? (Cf. Is John THERE?)

From a functional or pragmatic point of view, only existentials assert the existence of something. Presentatives, on the other hand, do not really make an existential assertion but point to an entity of which the addressee is not aware. The existence of that entity is presupposed rather than directly asserted. Example (20a) is already presupposing the existence of John, not asserting it.

Of course, at the discourse level, both presentatives and existentials are functionally similar in that both can introduce new referents —this is the reason for Lambrecht to put them into the same category in the first place— but they introduce their referents in a different manner. Pragmatically, existentials can be interpreted as presentatives, that is, the presentational function is a possible reading of existentials. The opposite is not true for presentative constructions. In a presentative construction, the existence of the entity in question is merely presupposed, and not directly stated. In other words, a presentative cannot merely have an existential reading.

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Furthermore, existentials and presentatives have different felicity conditions: an existential can be asserted at any time that the communication of the existence of something is relevant. On the other hand, presentatives can only be felicitously asserted if the addressee is unaware of the entity in question. Also, presentative constructions depend more on the conversational context than existentials. For instance, the presentative construction in example (24) is only felicitous if a yak is part of the context, whereas the meaning of example (23) is more independent from context.

(23)   There are yaks in Tibet.

(24)   THERE's a yak.

In other words, presentative constructions explicitly evoke the speaker and addressee's perspective. In this sense, they constitute more subjectified forms (see Traugott 1989). We will return to this point in §6.2.

Weather statements also constitute a 'classic' instance of theticity. As was mentioned in §2.1.1, weather statements are clear instances of subjectless sentences, and hence of sentences not having a subject-predicate structure. Of course, weather statements point to a state of affairs rather than to a property of a subject. Nevertheless, there is an important difference between weather statements and other types of thetics such as hot news statements. Climate conditions are not prototypical activities, in the sense that they do not have clear agency, and thus it is not surprising that their coding in many languages does not use a subject-predicate structure.

The case of physical sensation statements is similar in some respects. Again, the event they are pointing at is not a prototypical activity in which the subject is a clear agent or has clear control.

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Therefore, in the case of weather and physical sensation statements we can consider their thetic construal to be motivated by the nature of the event they are describing, rather than by information structure needs.

In contrast, hot news statements are at the center of the debate over the existence of theticity, precisely because they are entirely conditioned by information structure. They are usually described as answers to the question *What happened?,* or as 'out of the blue' announcements. In pragmatic terms, in uttering these statements the speaker assumes that the addressee is not prepared for the information that is being communicated. In fact, this is an important distinction between hot news statements and miratives: the latter are usually described as information marked as surprising for the speaker. If the information is only unexpected from the addressee's standpoint, it might be that the construction is not mirative but rather conveys a hot news statement.

Undoubtedly, the hot news statement is one of the most interesting thetic subtypes. It is not an exaggeration to say that one of the main goals of the studies on theticity has been to explain this thetic subtype.

2.2 Mirativity

In comparison to the concept of theticity, the concept of mirativity is relatively new. DeLancey (1997) was the first to propose mirativity as a universal semantic category. This proposal was a result of his examination of evidential systems. He found that in many of these systems, the inferential marking acquires a sense of unexpectedness, which becomes independent of the original inferential meaning.

Thus, miratives are markers of "the status of the proposition with respect to the speaker's overall knowledge structure" (DeLancey 1997: 33). More specifically, miratives convey that the information is new or unexpected from the speaker's perspective.

> The operational definition of the category is that it marks both statements based on inference and statements based on direct experience for which the speaker had no psychological preparation, and in some languages hearsay data as well. What these apparently disparate data sources have in common, as against general or culturally sanctioned knowledge and knowledge based on experience –be it inference from well-known facts or repeated direct experience – is that the proposition is one which is new to the speaker, not yet integrated into his overall picture of the world (Ibid: 35-36).

Interestingly, in his seminal work on miratives, DeLancey discusses an example from Turkish that is very reminiscent of Schmerling's examples of expected versus unexpected information in (11). Sentences below refer to the resignation of the president of Turkey (25a) and Nixon's resignation to the presidency of the United States (25b), respectively. Both events occurred in the early seventies. Notice that example (25a) contains the morpheme -*miş*, already discussed in §1.2.

(25) a. Ecevit   istifa   et-**miş**
     Ecevit   resignation   make-**MIR**
     '(It is reported that) Ecevit resigned'.
    b. Nixon   istifa   et-ti
     Nixon   resignation   make-PAST
     'Nixon resigned'

These sentences were originally presented in Slobin and Aksu (1982). These authors give the following contexts for the sentences:

> …when the speaker's mind is well prepared for an event –when he has full premonitory consciousness of an occurrence– even hearsay can be reported as direct experience. For example, during an early phase of investigating these issues in 1974, our minds were being increasingly prepared for Richard Nixon's resignation. When the event finally took place, it was quite natural to report it –

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although it was certainly a matter of hearsay– in the past of direct experience, *-di* […] During the same period, the Turkish premier Bülent Ecevit suddenly resigned. There was no way to report this event except in the past of indirect experience, *-miş,* although the source of experience –the mass media– was equally indirect in both cases […] the use of *-miş* implies an unprepared mind from the standpoint of the speaker (Ibid: 196).

Notice the striking similarity between Slobin and Aksu's examples and Schmerling's examples. If we consider example (25a) as a mirative, then perhaps we should classify a sentence such as *JOHNson died* as a mirative as well. We will return to this issue at the end of this section.

Further, Slobin and Aksu explain the psychological motivation for either using *-miş* or the direct experience marker.

> That which is reported as *-miş* today may be reported as *–di* next week or next month. In communicative terms, the *-miş* particle functions to indicate to the listener the source of currently relevant information. Psychologically, information which has been stored for some time becomes assimilated to one's own knowledge, often losing the qualification as to its source. Such information becomes part of the speaker's general mental set, and can no longer be reported as something which has entered an unprepared mind. Thus as Ecevit's resignation became familiar recent history, it came to be reported as *Ecevit istifa etti.* Indeed, all history is reported in this form (Ibid: 196-197).

Slobin and Aksu challenge the traditional view that considers *-miş* as an inferential evidential. They argue that what *-miş* expresses is that the information has not been assimilated yet.

> There are some kinds of events for which one is always unprepared — events which partake of a quality of unreality or otherworldliness. Thus the *-miş* form is always used in such narratives as myths, folktales, and fairy tales, and this is the form used for recounting those parts of dreams which are most alien to everyday experience. In all of these cases, the speaker is PSYCHOLOGICALLY DISTANCED FROM THE EVENT. This dimension of psychological distance is elusive. It is not a matter of placement of events on a time line, but rather one of relative closeness of events to one's ongoing feeling of participation in the here-and-now. Native speakers we have asked share the vague feeling that of two events occurring at the same objective point in past time — one related in *-miş* and the

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other in *–di* — the one encoded by *-miş* seems more 'psychologically distant' than the one encoded by *–di*. While this intuition is obviously in need of further research, it is consonant with our claim that the central meaning of the distinction between the two past tense forms is not so much one of the modality of direct versus indirect experience, but rather one of the degree to which the speaker's mind has been prepared to assimilate the event in question prior to forming an utterance about that event (Ibid: 198; emphasis added).

At first, miratives were considered a rather isolated phenomenon linked to evidential systems. In fact, authors still disagree with respect to the crosslinguistic frequency of mirative constructions. DeLancey, for example, argues that even English has a mirative intonational contour:

> The mirative intonation contour is an exaggerated version of the declarative intonation, with the tonic rise considerably higher. This intonation contour has the same general functional range as the mirative constructions that we have been examining, extending even to the complimentary sense. Commenting on a friend's child's performance at a piano recital, one would far more likely make a complimentary comment (e.g., *She plays really well*) with the mirative intonational contour than with ordinary statement intonation (DeLancey 2001: 377)

Notice however that DeLancey's example is rather an exclamative (it refers to the extent of a property, see §2.3).

On the other hand, Aikhenvald (2012: 474) considers mirativity as a rather exotic phenomenon among the world languages: "Mirativity appears to be more prominent in some language families that in others. It is a feature of numerous Tibeto-Burman languages, but appears to be a rare bird in South America, in Australia, and in New Guinea" — Of course, Aikhenvald is here referring specifically to the grammatical marking of mirativity, which might indeed be less common than the prosodic marking of it. In any case, an important point that both authors convey is that mirativity is not necessarily related to evidentials. That is, having an evidential system is not a necessary

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condition for having mirative markers in a language. Moreover, even in languages with evidential systems, it is possible that mirative forms are unrelated to them (Aikhenvald 2012; DeLancey 1997; 2001).

Although miratives and evidentials are not necessarily related, the relationship between both functions is an important issue. In this respect, DeLancey discusses the Hare particle *lõ*, which has inferential and mirative senses. Example (26a) is an affirmation about a past event, whereas example (26b) "could be used if the speaker has just come out of the house in the morning and finds bear tracks around the door" (DeLancey 2001: 375).

(26)   Hare (Athapaskan, Na-Dene)
         a. júhye   sa   k'ínayeda
            hereabout   bear   SG.go.around/3SG SBJ/PFCT
            'There was a bear walking around here'.
         b. júhye   sa   k'ínayeda   **lõ**
            'I see there was a bear walking around here'.

DeLancey even questions the treatment of this particle as an evidential. According to him, "the semantics of *lõ* are not those of a true evidential" (Ibid: 376). He bases his claim on the following example:

(27)   Heee, gúhde   daweda!   ch'ifi dach'ída   **lõ**
         Hey   up.there   SG.sit/3SG/IMPF   guy   sitting
         'Heey, (he's) sitting up there! The guy is sitting up there!

This example is from a narrative in which the hero "has been sitting up in a tree throwing branches down on an ogre who has been hunting for him. The ogre finally looks up and sees him" (Ibid: 376). After finding the hero, the ogre utters example (27). DeLancey notices that this example conveys a sudden direct perception of an unexpected fact, and not an indirect perception. Hence, he concludes that the meaning of the particle

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is fundamentally mirative, and that the inferential sense originated later from the co-occurrence of the mirative particle with the perfective aspect, as in example (26b).

> The frequent inferential sense [of the mirative particle in Hare] can be taken as simply reflecting the fact that an event which is known to the speaker only by evidence of its aftermath is normally something about which the speaker has no prior knowledge, and thus qualifies for inferential marking […] The implication of this, however, is that there will be a pragmatic implication of inferentiality when a mirative construction occurs with a perfective predication. If an event is already over, and the speaker was aware of it when it happened, it is likely to have already begun to lose its novelty in the speaker's mind, and thus its eligibility for mirative marking (Ibid: 379).

Notice that in this respect DeLancey's analysis of *lõ* is similar to Slobin and Aksu's analysis of the mirative in Turkish. On both accounts, the mirative meaning is given preeminence over the evidential meaning.

According to Aikhenvald (2004), however, the path of semantic extension goes the other way around from the one proposed by DeLancey. That is, from evidential to mirative meaning.

> In small systems with two evidentials, the non-firsthand evidential may extend to cover new, unusual, and surprising information —that is, develop mirative overtones. In larger systems, the inferred evidential may acquire a similar range of meanings. A reported evidential may occasionally acquire a mirative meaning in an evidential system of any kind. A firsthand or a visual evidential hardly ever does […] Mirative extensions often occur if there is a first person participant (Aikhenvald 2004: 195)

Aikhenvald examines miratives in several languages and how they are related to evidentials. From this examination, she proposes three semantic paths from evidentials to miratives. The path stated in (28) applies to miratives derived from non-firsthand specification. On the other hand, the path in (29) applies to miratives derived specifically from inferential markers. Finally, the path in (30) applies to a more specific case of inferential marking that involves a deferred realization on the part of the speaker.

"Deferred realization is an integral part of mirative meanings in all systems where mirativity is associated with inference" (Aikhevald 2004: 209).

(28)   Lack of firsthand information → speaker's non-participation and lack of control → unprepared mind and new knowledge → mirative reading

(29)   Speaker's deliberate non-participation → distancing effect → presenting the information as new, unexpected, and thus 'surprising'

(30)   Deferred realization: speaker sees or learns the result but interprets it post factum → the newly understood result is unexpected and thus surprising

In sum, Aikhenvald presents convincing arguments and evidence to conclude that the path from evidentials to miratives is more likely than the other way around.

Nevertheless, not all authors agree in separating miratives from evidentials as different categories. For various authors, mirativity is merely another interpretation of some evidentials. Thus, for Rett and Murray (2013) the relationship between evidentiality and mirativity is a matter of polysemy. They suggest the existence of a mirative evidential (ME) morpeheme, which marks either indirect evidence or mirativity, depending on the context. The mirative interpretation is restricted to recently learned events. They conclude that the mirative reading of ME morphemes conveys an illocutionary relation, namely the updating of the context by adding new information to the common ground. In contrast, the evidential reading merely conveys content that is not at-issue, and it is thus comparable to a nonessential adjective clause (*e.g. Hawk, **a champion runner,** won the race yesterday*). Thus, these authors deny that miratives are separated from evidentials.

Similarly, Peterson (2013) considers mirativity that relies on evidential systems as 'parasitic mirativity', in which mirativity is merely implicated instead of directly

conveyed. In these cases, the mirative interpretation can be cancelled without contradiction (i.e. the evidential interpretation remains). This view does not account however for those cases in which an inferential expressing mirativity is used in a context of direct evidence —as in example (27). In such cases, the cancellation of the mirative reading would result in an infelicitous utterance.

Lazard (1999) has proposed to regard evidentiality and mirativity as instances of a more abstract category, mediative, which would comprise all linguistic phenomena related to nonfirst-hand evidentials and miratives.

> When they [the speakers] use the ordinary, unmarked forms, they are stating the facts purely and simply as they know them, with no commentary. But, when they choose to use the special, marked forms, they are expressing them MEDIATELY, through their acknowledgment of the event, without specifying how it happened, and in so doing they are placing themselves, so to speak, at a distance from what they are saying. In the case of hearsay the utterance implies 'as I hear'; in the case of inference it implies 'as I infer'; in the case of unexpected perception it implies 'as I see'. Speakers are somehow split into two persons, the one who speaks and the one who has heard or infers or perceives. This operation distances them from their own discourse, whereas in neutral expression they adhere to their own discourse by virtue of the very laws of linguistic intercourse. The real value of the forms in question is this abstract distance, not any consideration of the nature of the source of the speaker's knowledge of the facts (Lazard 1999: 95; emphasis in the original).

The problem with the category 'mediative' is that it still has to be split at least in three subordinate categories expressing "either inference or hearsay or unexpected observation" (Ibid: 93). Perhaps for this reason the category of mediative has not been widely accepted, and most authors still prefer to use the labels of evidentials and miratives in order to establish a distinction between both.

The strongest position against mirativity is that of Hill (2012), who categorically denies the existence of mirativity as a linguistic category. According to this author, the

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phenomenon that has been erroneously regarded as mirativity is merely an instance of first-hand evidentiality. Other authors, however, have regarded this argument as flawed (Aikhenvald 2012; DeLancey 2012; Hengeveld & Olbertz 2012). We will review some of Hill's arguments in §6.3.3.

In conclusion, the concept of mirativity has been widely accepted. It is commonly used in descriptive grammars (e.g. Dixon 2004: 206-07; Kruspe 2004: 286-94) as well as in monographs specifically aimed to the study of mirativity in one particular language or linguistic family (e.g. Bashir 2010; Jones 2009).

Finally, one topic on the study of mirativity that has been almost neglected is that of the differences between mirative meanings, that is, the question whether all miratives convey the same meaning or some differences of meaning can be established between them. The only author that has treated this issue is Aikhenvald (2012), who proposed the following mirative meanings: sudden discovery, surprise, unprepared mind, counterexpectation and new information. We will return to this issue in §6.3.2.

2.2.1 Summary and Critical Assessment of the Literature on Mirativity

As we have already noticed, the relationship between evidentials and miratives is a fundamental issue. In this respect, we can distinguish between three different perspectives:

1) Mirativity is more basic and the inferential meaning is derived from it (DeLancey's perspective).

2) Evidentiality is more basic and mirativity is derived from it (Aikhenvald's perspective).

3) Mirativity is not really independent from evidentiality. This perspective has diverse formulations, but all of them agree with considering mirativity as a secondary interpretation of some evidentials.

However, for those cases where miratives are related to evidentials, I suggest that the path of semantic shift is more likely from evidentiality to mirativity —as argued in Aikhenvald (2004)— and not the other way around —as argued in DeLancey (2001). Moreover, I argue that the semantic shift from evidentiality to miratitivy is an instance of subjectification (see §6.3.2).

The concept of mirativity has proven to be quite useful for describing those grammatical markers expressing surprise or unawareness with respect to the information conveyed. However, the meaning of mirative elements has been described in the literature in rather vague terms such as 'surprise', 'unprepared mind', 'unassimilated information' and so forth. Also, they have not been related to other linguistic systems besides evidentials. Thus, the question of the character and nature of mirative elements is still an open debate.

Even more relevant for the purposes of the present research is the functional simmilarity between miratives and thetics. Slobin and Aksu's examples about Nixon and Ecevit are strikingly similar to Schmerling's examples about Truman and Johnson, respectively. Nevertheless, the Turkish particle *-miş* is described as a mirative, whereas the sentences in Schmerling's examples are described as instances of the thetic/categorical distinction. One possible solution is to consider that the range of meanings of *-miş* also includes theticity. If this is the case, then Turkish *-miş* constitutes an example of the functional similarity between thetics and miratives.

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In this investigation, I will consider miratives as the grammatical marking of surprise, specifically from the speaker's perspective. In the study of mirativity, it is necessary to clarify this point because some authors seeem to consider as miratives construtions that other authors would regard as thetic. We can avoid this confusion if we separate information-packaging configurations from the mere expression of surprise. The simpler way of doing this is to regard mirativity as expressing surprise only from the speaker's or the narrator's perspective (or from the perspective of the main character in a narrative). In contrast, if a construction expresses unexpectedness from the addressee's perspective, we will consider it as an information-packaging configuration, namely a thetic construction.

On the other hand, some studies do not establish a distinction between exclamatives and miratives, but consider exclamatives as miratives (e.g. Peterson 2013). In the present investigation, I will distinguish between miratives and exclamatives. We will address exclamatives in the following section.

2.3   Exclamatives

The most ancient reference to exclamative constructions is found in the writings of the Stoics. They observed the linguistic phenomena that in modern times we regard as 'sentence types' or 'speech acts' and subsumed them under the concept of *Lekton*, which they formulated as "that which subsists in conformity with a rational presentation" (Mates 1973: 15). Lektia are divided into complete and incomplete. Roughly, an incomplete Lekton is an isolated subject or an isolated predicate, whereas a complete Lekton corresponds to a subject-predicate structure.

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A proposition, according to the standard Stoic definition, is a complete Lekton that is assertoric (i.e., true or false) in itself. But there are also many other kinds of complete Lekta. There are questions, which, like propositions, are complete Lekta, but which demand an answer: "Is it day?" These are neither true nor false. There are inquires, which are like questions except that they cannot be answered with "Yes" or "No": "Where does Dion live?" […] There are imperatives (which convey commands), oaths, and salutations […] Besides these, THERE ARE QUASI-QUESTIONS ("How like to Priam's sons the cowherd is!"), and timid suggestions, and wishes, and prayers, and many others (Ibid: 18-19; emphasis added).

Stoics regarded the exclamative sentence as different from proper declarative assertions. Moreover, they distinguished exclamatives from questions. In fact, the relationship between exclamatives and questions has been a controversial issue in modern linguistics.

In traditional grammars, exclamatives are usually considered a sentence type, along with interrogatives, declaratives and imperatives. It is not clear, however, how exclamatives were integrated as a sentence type in the traditional grammar taxonomy in the first place.

Until the seventies, the current view in modern linguistics was that exclamatives were basically questions with an additional exclamative reading. In this context, McCawley (1973) argued that exclamatives constituted a different structure per se. In her article, she studied exclamatives having the structure of yes/no questions, and observed the following traits, which distinguish them from proper questions:

1) Falling intonation.

2) Use of interjections.

3) Use of adjectives not commonly allowed in questions: *My, is this cookie delicious!* (cfr. **Is this cookie delicious?*)

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4) Restrictions in the use of intensifiers: *Is syntax **extremely** easy?* (cfr. **Is syntax **extremely** easy!*

5) Differences in the meaning of *ever.* When used in an interrogative, *ever* means 'at any time' (e.g. *Are you ever not hungry?*). In contrast, when used in an exclamative, *ever* means 'truly, really' (e.g. *Is your mother ever young!*).

6) Restrictions in the use of negatives (e.g. **How easy syntax isn't!*).

7) Non-occurrence of comparative and superlative elements (e.g. **Is syntax as easy as phonology!*).

8) Restrictions in the use of some auxiliaries. For example, *can* only means 'able' in exclamatives, but the modal interpretation of 'possibility' is excluded (e.g. *Boy, can he ever swim!*).

9) Restrictions in the use of indefinite subjects. For example, the utterance *Are **some** Swedes industrious?* can only function as a question, and not as an exclamative (cfr. **Are **some** Swedes industrious!*)

10) Combinatory possibility with appositives, which is contrary to the syntax of questions, as in *Does Harry have a car, namely a Rolls Royce!*

11) Restrictions in sentence conjoining. For example, *Are you hungry or are you not hungry?* can only function as a question, whereas *Am I hungry or am I hungry!* can only function as an exclamative.

All the features above single out exclamatives as different from yes/no questions. Having proved this point, McCawley advances the following questions for future research:

1) What is the semantic structure of this exclamative subtype?

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2) What is the semantic difference between this particular exclamative subtype and those exclamatives that use other interrogatives (e.g. *What beautiful legs she has!*).

3) What could be the abstract performative verb for the exclamative speech act? The verb *to exclaim,* for example, does not seem to be a possible candidate:

(31)   *Harry exclaimed how easy syntax is.

Another pioneer study of exclamatives is Elliott (1974), which also argues for a distinction between exclamatives and questions. One important difference between this study and McCawley's approach is that Elliot aims to describe all exclamative types in English, and not only those resembling yes/no questions.

Elliot argues that exclamatives constitute a sentence type just like interrogatives, imperatives and declaratives. However, one problem that he faces is the fact that exclamatives cannot be the complement of a performative verb — at the time, this was regarded as a necessary condition for a structure to be considered a sentence type (Ibid: 231).

Elliot proposes that question-like exclamatives are derived from exclamatives with *so* or *such.* Thus, he considers (33) derived from (32):

(32)   I regret that I have caused you so very much trouble.

(33)   I regret how very much trouble I have caused you.

In other words, Elliot suggests that question-like exclamatives originate in embedded exclamatives.

Elliot also presents syntactic evidence for distinguishing exclamatives from questions. Generally speaking, the evidence that he finds is very similar to that presented

by McCawley. Besides, Elliot emphasizes the striking similarities between exclamatives and questions and how these similarities have not been explained. For example, it is not clear why not all question words are used in exclamatives. He points to the following examples, which are "on the very edge of grammaticality" (Ibid: 232):

(34)　?Why he bought that coat!

(35)　?Who you meet on the street!

(36)　?Where on campus is located!

(37)　?When they chose to get married!

Elliot himself does not offer a general explanation for these restrictions. This is because his aim is more modest: to argue for the status of exclamatives as a syntactic structure per se.

Whereas McCawley and Elliot's regard exclamatives as different from questions, Huddleston (1993) argues against a syntactic distinction between both sentence types. Huddleston criticizes McCawley's view as an inadequate understanding of the pragmatics of questions. According to Huddleston, questions are more varied than McCawley's article suggests. For example, questions can perform indirect speech acts (e.g. *Could you please open the window?*), and also can be neutral or biased (e.g. *Doesn't he talk a lot of nonsense?* is a more biased question than *Does he talk a lot of nonsense?*). Huddleston examines every argument given in McCawley (1973) and concludes that exclamatives are not syntactically different from questions and that the differences between exclamatives and questions cannot be properly understood in syntactic terms, but they are better explained as different pragmatic uses of the same syntactic structures.

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In summary, Huddleston accepts that exclamatives constitute a pragmatic function that differs from questions, but denies that this distinction can also be found at the syntactic level of analysis.

Sadock and Zwicky (1985) is a typological survey of sentence types that also includes exclamatives. They consider exclamatives as a 'minor' sentence type. The label 'minor' is due to the fact that they are not as widespread as other sentence types such as interrogatives or imperatives. Yet they are relatively prominent. Sadock and Zwicky observe the resemblance of exclamatives to interrogatives and attribute it to the nonassertive character of the former. On the other hand, they argue that exclamatives are structurally similar to declaratives because of the functional similarities between both sentence types.

> The function of exclamatory sentences is much like that of declarative sentences, except that exclamations are intended to be expressive whereas declaratives are intended to be informative. Both represent a proposition as being true, but in an exclamation, the speaker emphasizes his strong emotional reaction to what he takes to be a fact, whereas in a declarative, the speaker emphasizes his intellectual appraisal that the proposition is true (Ibid: 162).

Thus, according to Sadock and Zwicky, the key characteristics of exclamatives are nonassertivity and expressivity.

So far we have reviewed studies that focus on the similarities between exclamatives and questions. In fact, this is the case of most studies on exclamatives. On the other hand, Groussier (1995) takes a more general standpoint. She considers intensification to be the main function of exclamatives, which perform this function in very specific ways. Instead of merely using lexical intensifiers such as *very* or *really,* exclamatives use three major strategies: anaphora, interrogative forms and truncated

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utterances. Anaphoric exclamatives use elements as *such* and *so* (e.g. *Kate is so stubborn!*); whereas interrogative exclamatives use interrogative forms. On the other hand, in the case of truncated exclamatives, a syntactic or textual part of the utterance is omitted (e.g. *To think she can be so stubborn!*). Groussier argues that all exclamative forms are essentially textually truncated elements, and thus she describes the exclamative assertion as manifesting the impossibility of saying something (*incapacité a dire*). This argument is similar in some respects to Sadock and Zwicky's description of exclamatives as nonassertive. According to Groussier, the ultimate goal of exclamatives is to center the addressee's attention on the intensification they perform.

Michaelis and Lambrecht (1996a) is a comprehensive study of the structural properties of English exclamatives. They propose a superconstruction: the Abstract Exclamative Construction (AEC), which interacts with other grammatical templates producing several exclamative subtypes. According to the authors, the AEC does not consist of a specific grammatical structure, but rather of a constellation of pragmatic conditions, which are listed below and explained in the following paragraphs.

    a. Presupposed open proposition.

    b. Scalar extent.

    c. Assertion of affective stance: expectation contravention.

    d. Identifiability of described referent.

    e. Deixis.

According to Michaelis and Lambrecht, the AEC contains an open proposition, namely, a variable referring to the particular degree specification of the property asserted in the exclamative utterance. For example, in the utterance *I can't believe how much he's*

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GROWN!, the open proposition refers to the extent to which the person in question has grown. Since in exclamative utterances the specific scalar extent is never specified, the authors claim that this extent is conveyed as an open proposition:

> [In the example *I can't believe how much he's GROWN!*] The quantity expression *much* invokes a scale whose origin is some minimal amount. The open proposition places the individual at some point on the scale of ascending quantity for growth. The entire utterance expresses the speaker's judgment that the proposition is surprising, and the surprise stems from the fact that the degree in question is higher than the speaker had expected (Ibid: 379).

In other words, Michaelis and Lambrecht attribute the surprising effect of exclamative utterances to the representation of the property as exceeding an expected scalar extent. However, they maintain that this surprising effect is achieved by leaving unspecified the degree of the property in question (i.e. it is only conveyed as an open proposition). For Michaelis and Lambrecht, exclamatives are nonassertive in this sense (they do not assert the scalar extent of the property conveyed).

Also, Michaelis and Lambrecht suggest that the referent of an exclamative construction has to be contextually identifiable. In other words, the subject of an exclamative cannot be left unspecified. A related property is that all exclamatives are deictic, that is, they are grounded in the context of communication.

Michaelis and Lambrecht argue that the AEC is realized in different syntactic forms, but these forms always fulfill the pragmatic conditions described above.

Interestingly, Michaelis and Lambrecht also examined the relationship between information structure and exclamatives. They suggest that information structure in

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exclamatives varies according to the syntactic construction involved —thus, they regard information structure as dependent on syntactic structure.[18]

Following is a list of English exclamative constructions, as described in Michaelis and Lambrecht (1996a):

1) THE INDIRECT EXCLAMATIVE (e.g. *I'm amazed at how much I spent*). According to the authors, this construction is derived from the interaction of the AEC with indirect questions (e.g. *I wonder how much I spent*).

2) THE EXTRAPOSED INDIRECT EXCLAMATIVE (e.g. *It's amazing how much he's GROWN*). As in the case of the indirect exclamative, the authors relate this construction with indirect questions. Michaelis and Lambrecht consider the information structure of this construction to be thetic.[19] They explain this construction as follows:

 The presupposed information is represented as the open proposition *He has grown to X extent*. Although this proposition is known information, it is focal rather than topical. [This sentence] could not be an answer to a question like: "Tell me something about how much he's grown". Formally speaking, sentence-final elements which bear accent represent focal elements. Therefore, we say that BOTH THE PREDICATE AND THE OPEN PROPOSITION ARE IN FOCUS, and [this sentence] COUNTS AS A SENTENCE-FOCUS SENTENCE (Ibid: 383; emphasis added).

3) THE INVERSION EXCLAMATIVE (e.g. *God, am I LATE!*). This construction results from the interaction between the AEC construction and the Inverted Clause construction (e.g. *Am I late?; Had I known…; So did she*). The authors also

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[18] "Some exclamatives represent predicate focus, or topic-comment, sentences and some represent sentence-focus structures" (Ibid: 382). That is, Michaelis and Lambrecht regard some exclamatives as categorical and others as thetic —notice that they seem to exclude the narrow identificational focus construction as an exclamative structure.

[19] 'Sentence-focus' in their terminology, which follows Lambrecht (1994).

compare this exclamative subtype to thetic constructions using inverted clauses (e.g. *and into the room walks Harry*). In respect to inversion as a syntactic device, the authors observe that at "the level of speech-act type, inversion can also signal that the speech-act in question is not a declarative. Questions are not declaratives and neither are exclamatives" (Ibid: 384).

4) THE ANTITOPIC EXCLAMATIVE (e.g. *JESUS it's cold out there*) is related to the canonical subject-predicate construction (i.e. the categorical statement). "An antitopic is a de-accented resumptive element which appears to the right of the focus domain. Antitopics, like topics, are referential elements which are ACTIVE or ACCESIBLE in the discourse context" (Ibid: 385; emphasis in original). In other words, the authors claim that this construction is basically an inverted topic-comment construction. Antitopics, just like topics, are already known and constitute active information —only the syntactic position is changed. Thus, Michaelis and Lambrecht claim that in uttering, for example, *JESUS it's cold out there,* the speaker is not conveying new information because the climatic conditions are already part of the shared knowledge.

5) THE WHAT-A EXCLAMATIVE (e.g. *What a good TIME we had*). "In this construction, the scalar degree is encoded by the nominal modifier *what* or *such* […] The scalar property may be encoded by a prenominal adjective" (Ibid: 385).

6) THE DEGREE-ADVERB EXCLAMATIVE (e.g. *GOD, I'm so TIRED of this [that I want to SCREAM])* is the result of the interplay between the AEC and the subject-predicate construction. Also, it involves anaphoric degree word modification (by using *so*). Michaelis and Lambrecht explain that the construction would not

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function as an exclamative if it used *very* instead of *so* (*GOD, I'm very tired* is not exclamative). This is because *very* is not compatible with the semantics of exclamatives (the sentence *GOD, I'm very ANNOYED with him* is odd). On the other hand, there is some property in the adverb *so* that makes it compatible with exclamative semantics. The authors explain this peculiarity of *so* as follows:

> It seems to be no accident that the Degree-Adverb Exclamative requires the anaphoric degree word *so.* This adverb is invoked by a correlative construction which presupposes the attainment of a particular degree: the consecutive-clause construction. The clause denoting the consequence is new information; the fact that I am tired to some degree is presupposed. Thus, with or without a consecutive clause, [the Degree Adverb Exclamative construction presupposes] the attainment of a given scalar degree, as required by the AEC (Ibid: 386).

In other words, according to the authors, the meaning of *very* is incompatible with exclamatives because it does not convey the particular degree as an open proposition, but merely in a rather vague manner. In contrast, *so* anaphorically specifies an attained specific degree of a scalar property (of course, in Michaelis and Lambrecht's account, the exclamative version conveys the specific degree as an open proposition).

7) THE NP-COMPLEMENT EXCLAMATIVE (e.g. *I can't believe the TIME I spent on this*). This construction is formed by an epistemic predicate that denotes the affective stance (i.e. the expression of surprise) and that takes a definite-NP complement.

8) NOMINAL EXTRAPOSITION (e.g. *It's amazing the DIFFERENCE!*). Michaelis and Lambrecht argue that this construction is different from right dislocation because it lacks agreement between the pronominal subject and the extraposed NP (e.g. *It's astonishing the BOOKS that can pile up*). According to Michaelis and

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Lambrecht's analysis, the postpredicate NP is not topicalized, but focused, and by being focused it receives a metonymic scalar interpretation.[20]

9) THE BARE-NP EXCLAMATIVE (e.g. *The things I put UP with around here*) is an elliptical construction "where the affective judgment is pragmatically inferred" (Michaelis & Lambrecht 1996a: 388)

Michaelis and Lambrecht's ideas were further developed in Michaelis (2001), which is a more comprehensive typological survey on exclamative constructions. Michaelis starts by specifying the semantic and pragmatic conditions of exclamatives. Essentially, these conditions are further elaborations of those already stated in Michaelis and Lambrecht (1996a):

(a) PRESUPPOSED OPEN PROPOSITION: "unlike declaratives, [exclamatives] presuppose that the proposition expressed is mutually known by the speaker and hearer" (Michaelis 2001: 1040).

(b) EXPRESSION OF COMMITMENT TO A PARTICULAR SCALAR EXTENT: The presupposed proposition necessarily invokes a scalar degree, which also constitutes new information. "Thus, the propositions which are presupposed in exclamative utterances can be represented as open propositions like 'It is hot to x degree'" (Ibid: 1040).

(c) EXPRESSION OF AFFECTIVE STANCE TOWARDS THE SCALAR EXTENT: Exclamatives express the speaker's affective response to a situation. They convey surprise but not in a general sense; more specifically, "surprise entails a JUDGMENT by the

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[20] Michaelis and Lambrecht (1996b) explains nominal extraposition in further detail.

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speaker that a given situation is NONCANONICAL" (Ibid: 1039; emphasis in original). The affective instance, however, is not necessarily overtly coded, but can also be inferred or conveyed by implicature.

(d) PERSON DEIXIS: Exclamatives necessarily express the speaker's evaluation of the state of affairs in question. They cannot be used to report the perspective of a second or third person.

(e) IDENTIFIABILITY OF THE REFERENT: The referent of the exclamative must be clearly identifiable in the speech situation, even if it is not expressed literally in the utterance.

Having enumerated the features of the exclamative sentence type, Michaelis explains why a news-reporting (thetic) statement such as *They dismiss the Paula Jones case!* is not an exclamative, although it also conveys surprise. Thetics are not exclamatives because they do not fulfill the pragmatic conditions of exclamatives: they do not presuppose the proposition, but directly assert it; in addition —and more importantly— they do not have a scalar interpretation.

In contrast to Michaelis and Lambrecht (1996a), which considered some exclamative subtypes as thetics, Michaelis (2001) considers all exclamatives as topic-comment structures. Moreover, essentially she regards exclamatives as double predications: "they not only predicate a scalar property of a given referent, but also predicate a property (that of violating expectation) of a degree" (Ibid: 1048). She refers to this expression of unexpected degree as a 'noncanonical judgment'.

One aspect of exclamatives that Michaelis emphasizes is their scalarity. She argues that an exclamative like *How prime is this number!* is ill-formed because it lacks a possible scalar interpretation.

In her survey, Michaelis describes the following structural properties of exclamatives:

1) Co-occurrence with interjections.

2) Subordination to factive epistemic verbs (e.g. *It's amazing how much noise they make!*).

3) Use of topic constructions (including antitopic constructions, i.e. dislocated topics). For example, in the sentence *She is pretty SHARP, my mom,* the topic (*my mom*) is dislocated.

4) Use of anaphoric degree adverbs: "we find that when languages use degree words other than question words in exclamative constructions, these are anaphoric degree words, analogous to *so*" (Michaelis 2001: 1045).

5) Information question form. Michaelis argues that the motivation for exclamatives to use interrogative forms is that both sentence types can point to a numerical scale. For instance, in uttering *How much did he spend?,* the speaker wants "to know where the spending ranks on a numerical scale" (Ibid: 1047); while in uttering *How much he spent!,* "the speaker asserts that the spending ranks high on that numerical scale" (Ibid: 1047). The difference between both being that questions express the desire to know, whereas exclamatives express that the property in question is higher than expected. "However, both speech acts have the same pragmatic starting point: the speaker takes for granted, and presumes that

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the hearer is willing to take for granted, the proposition [He spent X amount]"
(Ibid: 1047).

6) Use of NP complements (e.g. *I can't believe **the way they treat us***). This example
is "indeterminate as to whether the relevant scale for treatment is cruelty,
condescension, etc." (Ibid: 1048). Michaelis proposes that, in this type of
exclamative, the structure that conveys the scalar extent is the NP.

> The use of a NP to denote a scalar degree is motivated in terms of
> semantico-pragmatic properties of the exclamative sentence type. The
> proposition presupposed by an exclamation refers to a scalar extent. A
> scalar extent is something which can be indexed… Something which can
> be indexed counts as referential, i.e., as an entity. Since nouns
> prototypically refer to entities… it stands to reason that a noun should be
> used to refer to a scalar extent in a construction which serves to comment
> on that extent (Ibid: 1048).

7) Use of free NPs (e.g. *The indignities that the world heaps on him!*). According to
Michaelis, in this construction the affective stance is merely inferred.

8) Use of syntactic inversion (e.g. *Can this kid direct second unit!*). Michaelis relates
this feature to the nonassertivity of exclamatives.

To sum up, in Michaelis (2001), exclamatives are defined according to certain
pragmatic features (affective stance, open proposition conveying an unexpected scalar
extent, deixis and presupposition of the content of the exclamative assertion), and
subsequently, the structural properties of the specific exclamative constructions are
described. The existence of an open proposition in exclamative sentences is explained in
terms of the relationship between exclamatives and interrogatives. However, an open
proposition is also postulated for exclamatives that do not resemble questions at all.

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Zanuttini and Portner (2003) is a study of exclamatives from the perspective of generative grammar. As several other studies on exclamatives, this study is focused on the resemblance between exclamatives and questions. They propose that exclamative sentences have two features in common: on the one hand, exclamatives, as questions, contain a WH operator, which denotes a set of alternative propositions (e.g. *Where is Martha?* entails the set of places where Martha can be).

Furthermore, they propose an abstract exclamative morpheme —abstract in the sense that it is not linguistically coded—, FACT, which conveys that the propositional content is presupposed. The combination of both operators produces what they call a 'widening effect':

> For example, *How tall Muffy is!* says that Muffy has the property of tallness to a very high degree. While this is certainly correct, it cannot be a complete description since it doesn't explain how the exclamative differs from declaratives like *Muffy is very/quite/extremely tall.* Our analysis in terms of widening can account for the intuition behind descriptions in terms of extreme degree. With a scalar word like an adjective as the head of the exclamative's WH phrase, the domain of quantification for $R_{widening}$ is a set of heights. These heights are organized into a scale, and a domain will naturally be taken as a continuous subpart of the scale, in that if 5'10" and 6' are in a domain of quantification, 5'11" will naturally be as well. Saying that the force of exclamatives involves widening the domain means that the subpart of the scale considered relevant for the case at hand must be extended. This will result in the inclusion of new heights previously considered too great for consideration, one of which will be that of Muffy (Ibid: 55).

According to Zanuttini and Portner, this widening effect is the result of the mutual obstruction between the FACT morpheme and the WH operator. Consequently, the locution is neither a question nor a declarative. The only possible reading of this configuration is as exclamative, whereby the propositional content is presupposed and the WH operator merely performs a widening effect that functions as an intensifier.

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Zanuttini and Portner extend their analysis to exclamative constructions that do not contain a explicit WH operator (i.e. an interrogative word), such as exclamatives having the form of yes/no questions, and bare NP exclamatives (e.g. *The things he says!*). They argue that this exclamative subtype also contains a WH operator and a FACT morpheme, but in this case both operators lack structural coding.

All approaches cited so far conceive the exclamative utterance either as a sentence type or as a speech act. In contrast, Moutaouakil (2005) suggests that exclamatives are neither sentence types nor speech acts, but a modality configuration. This study is a crosslinguistic investigation of exclamatives in a small sample of languages (English, French, Standard Modern Arabic, Moroccan Arabic and Egyptian Arabic).

Whereas declaratives, interrogatives and imperatives have recognizable formal features, exclamatives are "very diversified and differ from one language to another" (Ibid: 352). Moreover, it is frequently the case that languages do not even have a specific grammatical form that express exclamativity. In any case, exclamatives seem to borrow their forms from other sentence types, for example:

(38)   She is NICE! (Declarative)

(39)   a. Is she NICE!
        b. Isn't she NICE! (Interrogative)

(40)   Look who is coming THERE! (Imperative)

Furthermore, exclamatives do not behave as speech acts. In this respect, Moutaouakil applies several tests to exclamative constructions in order to demonstrate that they lack the essential properties of speech acts:

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1) Exclamatives "do not necessarily involve interactional relationships between the speaker and the addressee, which is one of the defining features of illocutionary force" (Ibid: 354).

2) In the traditional view of speech acts, their propositional content must be related to the speaker or the addressee; but exclamatives are not necessarily related to the interlocutors.

3) Illocutions usually can follow a conversion process (e.g. a declarative can have imperative force) but this is not the case for exclamatives. Other speech acts, such as declaratives and interrogatives, can be converted to exclamatives, but the other way around is not possible.

4) Adverbial expressions as *frankly, sincerely* and *honestly* can convey illocutionary force, but that is not the case for adverbial expressions related to exclamatives as *surprisingly*, *wonderfully* and *amazingly*. These later expressions merely modify the content of the clause, but not the illocutionary force of the utterance.

5) Exclamativity is "a gradable notion in the sense that one can be impressed to different degrees" (Ibid: 356), as in the following examples from French:

(41)   a. Elle est BELLE!
       'She is nice!'
    b. Est-elle BELLE!
       'Is she nice!'
    c. N'est-elle pas BELLE!
       'Isn't she nice!'
    d. Comme elle est BELLE!
       'How nice she is!'

In contrast, "performance of a speech act cannot be conceived of as a matter of degree: a speech act is either wholesale performed or not performed at all" (Ibid:

356). For instance, a declarative such as *I tell you very much that John is ill* is odd.

Moutaouakil concludes that exclamativity, unlike the three basic locutions (declaratives, imperatives and interrogatives) "is an additional optional feature which is superimposed upon a linguistic expression which already has an illocutionary value" (Ibid: 356). It is not a basic illocutionary force. As speech acts, exclamatives are assertions. Another proof that Moutaouakil presents for this to be the case is the possibility of coordination. As he notes, two clauses can be coordinated if they convey the same illocutionary force. For instance, in examples (42a & 42b), two declarative and two interrogative clauses are combined, respectively. In contrast, example (42c) is odd because an interrogative cannot be coordinated with a declarative.[21]

(42) a. Mary is rich and she is generous.
      b. Is Mary rich and is she generous?
      c. * Is Mary rich? And she is generous.

On the other hand, exclamative constructions can easily be combined with declaratives and rhetorical interrogatives:

(43) a. Mary is rich and how generous she is!
      b. Isn't Mary rich?! And how generous she is!

Having argued against the possibility of exclamatives being speech acts or sentence types, Moutaouakil proposes a typology of exclamative modality having the following values:

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[21] However, a biased question like *Isn't Mary rich?* would be acceptable in this context (William Croft, p.c.).

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1) APPRECIATIVE VS. DEPRECIATIVE EXCLAMATIVE MODALITY: Exclamatives can have specialized forms that either convey appreciation or depreciation. For example, Modern Standard Arabic has a particle, *niʕma,* used in appreciative constructions such as in example (44a). On the other hand, another particle, *biʕsa,* has a depreciative meaning illustrated in example (44b).

(44)   a. niʕma   l-fatatu   Hindun!
        Good   the-girl.NOM   Hind.NOM
        'What a good girl Hind is!'
        b. biʕsa   l-jaru   Zaydun!
        Bad   the-neighbour.NOM   Zayd.NOM
        'What a bad neighbour Zaid is!'

2) DEGREES OF EXCLAMATION: As already mentioned, exclamatives manifest various degrees of surprise or impression. Mutaouakil propose the following hierarchies:

(45)   a. fantastic   →   marvelous   →   nice   → beautiful
        b. incredible →   astonishing →   amazing   → surprising

   "In general, the less marked exclamative constructions are used to express the low degrees of exclamation whereas the more marked constructions are reserved to mediate the high ones" (Ibid: 364). For example, in French:

(46)   a. Elle est BELLE!
        b. Qu'elle est BELLE!
        c. Qu'est-ce qu'elle est BELLE!
        d. Dieu! Qu'est-ce qu'elle est BELLE!

   Mutaouakil concludes: "the common feature of all these sentences is that they express increasing appreciation by adding or cumulating special morphemes (quantifiers, particles, etc.)" (Ibid: 366).

   According to Mutaouakil, the fact that interrogative-like exclamatives usually express a higher degree of surprise than declarative-like exclamatives is due to the

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presuppositional character of exclamatives, which typically presuppose "the truth of the fact which causes the exclamative reaction" (Ibid: 364). This explains why example (47a) is less expressive than example (47b):[22]

(47)   a. She has GROWN!
       b. Hasn't she GROWN!

The reinterpretation of exclamativity as a modal configuration allows Mutaouakil to propose that modal exclamativity does not only appear at the clause level, but also at the discourse level, as in the following example:

(48)   What a nice girl I saw yesterday in Amsterdam! What beautiful eyes she had! How lovely was her smile!

To sum up, in Mutaouakil's approach, exclamativity is conceived as a modal configuration that either appreciates or depreciates an object and that iconically adds more linguistic structure to convey a higher level of expressive content. Also, notice that Mutaouakil argues that exclamatives rely on presupposed content, which is also Michaelis' (2001) perspective.

In their study on subject auxiliary inversion (SAI), Goldberg and Del Giudice (2005) addressed the case of exclamatives, and relate them to a subtype of questions.

> We suggest that it is possible to relate exclamatives to questions in a quite strong, direct way, therefore more strongly motivating the fact that exclamatives, like questions, are expressed with SAI. We propose that exclamatives arose diachronically as rhetorical questions: that they should have the form of questions was therefore unremarkable. While exclamatives evolved into a construction type of their own, they simply retained the grammatical marking that had been directly motivated by their function (Ibid: 420-21).

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[22] Moutaouakil's argument is not entirely clear, but he seems to claim a correspondence between the force of the assumptions communicated and the expressivity of the utterance. Example (47a) communicates its presupposed content in a stronger manner than example (47b), hence, example (47a) is less expressive.

Goldberg and Del Giudice support their argument by examining 200 tokens of exclamatives retrieved from the Internet. The phrase *or what* was included as a tag question in 13% of the tokens (26/200) thus suggesting "that speakers remain aware of the link between exclamatives and questions" (Ibid: 421). For instance:

(49)   a. Boy, is this an awesome picture **or what?!?**
        b. Wow! Does this guy own stock in Microsoft **or what?**

Hence, Goldberg and Del Giudice conclude that exclamatives originated in rhetorical questions.

An entirely corpus-based account of exclamatives is Collins (2005), which addresses exclamative clauses in English. This study is restricted to interrogative-like exclamatives —according to Collins, only in interrogative exclamatives is the exclamative illocutionary force grammaticalized. This study presents important observations on the distribution of exclamatives. For example, Collins describes "a tendency for exclamatives to occur more frequently in registers marked by personal involvement and informality" (Ibid: 15). In writing, exclamatives are much more common in works of fiction than in other genres. Also, Collins found a tendency of *what a* exclamatives to appear as independent, rather than as subordinated sentences. On the other hand, exclamatives with *how* follow the opposite tendency: they most commonly appear as subordinated clauses.

More ambitiously, Merin and Nikolaeva (2009) presents a mathematical model of the conditions that trigger exclamatives. They consider exclamatives as a speech act type. The most relevant part of their study for the present investigation is their theoretical

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considerations on exclamatives and some observations they incidentally make on the similarities between exclamatives, thetics and miratives.

Merin and Nikolaeva use unexpectedness as the operational criterion for defining exclamatives. They observe that exclamatives are structurally similar to other constructions that are also related to unexpectedness, such as thetics and miratives. They define the exclamative function as follows:

> What is expressed by exclamations, with more or less explicit reference to entities that occasion it, is a drastic, sudden deviation from EXPECTATION. Expectation is to be understood as in contemporary decision theory: as a mental or behaviourally dispositional attitude comprising, in the general case, both doxastic (belief-related) and boulomaic (desire-related) components that can trade off against each other. The expectation change is implemented as a transformation of a probability or value distribution over a partition into distinct 'cells' of a space of possibilities. The transformation is in general neither assertoric nor presuppositional as familiarly defined (Ibid: 14; emphasis in original).

Merin and Nikolaeva agree with other authors in the following claims:

1) "Exclamatives express an extreme deviation from some norm —which might be phrased in terms of extreme 'degree' on some 'scale'— and the speaker''s reaction to it" (Ibid: 4).

2) "Exclamative utterances presuppose at least part of what is being exclaimed over" (Ibid: 6).

3) "The exclamative utterance expresses an emotive or affective reaction of the speaker's to an eventuality exclaimed over" (Ibid: 7).

4) "The exclamative utterance is non-assertoric" (Ibid: 11).

Also, they add the following claim: "The exclamative utterance is presented as being spontaneous, that is, involuntary or at any rate unpremeditated" (Ibid: 11).

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Merin and Nikolaeva compare exclamatives with the following linguistic functions: thetics, miratives and optatives.

The authors acknowledge that thetics are a rather controversial category: "Their syntax and ready deniability makes them assertions, yet, like typical exclamations, they are uttered 'out of the blue' and are most easily pronounced or punctuated emphatically as exclamations" (Ibid: 68). Thetics are described in the literature as all-new sentences. In this respect, they would be the exact opposite of exclamatives, which are described as 'all presupposed' sentences (Ibid: 69). In other words, the opposition would be between sentences whose content is new (thetics) and sentences whose content is presupposed (exclamatives). This functional dissimilarity is problematic to Merin and Nikolaeva's claim of thetics and exclamatives being functionally similar. In order to defend this claim, Merin and Nikolaeva challenge the view of thetics as all-new sentences:

> The best way to resolve the issue [of the functional disparity between exclamatives and thetics], we think, is to assume that [thetics] are always in the universe of discourse — part of the furniture, as it were — but with a very high, yet non-unit degree of belief ostensibly attaching to their regional default state predicate until utterance time (Ibid: 69; emphasis in original).

In other words, the authors do not consider thetics to convey all-new information, but rather, information that is in the background and suddenly becomes relevant to the situation of communication. In this respect, their position is comparable to that of Kuroda reviewed in §2.1.2.

Merin and Nikolaeva conclude that thetics "appear to share with exclamatives (i) the moment of drastic unexpectedness, at utterance time, for the speaker and, in many cases, (ii) a lack of the kind of assertoricity which goes with orderly argumentative support" (Ibid: 85).

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Like thetics and exclamatives, miratives convey unexpectedness. The authors observe that, in several languages, the same construction is used to express exclamativity and mirativity. Hence, "THE BORDERLINE BETWEEN MIRATIVES AND EXCLAMATIONS IS NOT CLEAR-CUT [...] Both types serve to express that the designated situation fails to correspond to the speaker's prior expectation, EXCLAMATIVES DOING SO SOMEWHAT MORE EXPRESSIVELY" (Ibid: 79; emphasis added).

Merin and Nikolaeva also compare exclamatives with optatives, namely, constructions expressing wishes. They observe that, crosslinguistically, exclamatives are structurally similar to optatives. They associate these similarities to the sense of unexpectedness of both functions: "in both [optatives and exclamatives], the current state of the world is presented as deviating grossly from the speaker's expectations" (Ibid: 82).

In conclusion, Merin and Nikolaeva's study adds some interesting ideas to the discussion of the nature of exclamatives and the similarities between exclamatives, thetics and miratives.

Rett (2011) is a study on exclamatives that distinguishes between them and mere 'sentence exclamations'; the later convey surprise or unexpectedness but they differ from exclamatives in not having a scalar degree interpretation. For instance, the following sentence assert surprise, but no scalar degree is involved:

(50)   (Wow,) John bakes delicious desserts!

In contrast, example (51) has a scalar interpretation, and thus can be considered a proper exclamative in Rett's sense.

(51)   (My,) What delicious desserts John bakes!

Rett analyzes bare NP exclamatives in the same vein of Zanuttini and Portner (2003). Thus, she postulates a Measure Operator (M-OP), which is not structurally coded, but that is present anyway, whenever the proposition refers to measurable entities. Rett acknowledges however that her argument entails another problem: sentence exclamations can also refer to measurable entities, thus, why do they not usually receive a scalar interpretation? Rett proposes the following answer: the measure operator is restricted to NPs having a determiner. Hence, (52) can function as an exclamative because the determiner allows a scalar interpretation, but a nonexclamative (nonscalar) interpretation is also possible. On the other hand, (53) only allows a nonscalar interpretation, and thus cannot be considered an exclamative at all.

(52)   I am surprised at/by the desserts John baked. (*individual or degree reading*)

(53)   I am surprised at/by some desserts John baked (*individual reading only*)

However, this ad hoc solution does not account for all contrasts between indefinite and definite nouns in exclamative sentences. For example, it does not explain why *what a* exclamatives cannot usually contain definite articles, as in the following example:

(54)   * What **the** lovely family you have!

The difference between miratives and exclamatives is explicitly addressed in Olbertz (2012). First, she criticizes Moutaoaukil's perspective for being too general (considering as exclamatives all kinds of emphatic utterances). Olbertz proposes a distinction between miratives and exclamatives; the former are modality markers, whereas the later are markers of illocutionary force. She analyzes data on mirative and exclamative constructions from Ecuadorian Spanish and concludes that miratives operate

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at the representational level, thus modifying the propositional content, whereas exclamatives operate at the interpersonal level, thus modifying the communicated content (i.e. the speaker's intention in uttering the proposition).

2.3.1 Summary and Critical Assessment of the Approaches to Exclamatives

Exclamatives have been subject to diverse theoretical treatments. Nevertheless, we can find the following points in common among theorists:

1) Exclamatives are not merely a subset of questions. They constitute a construction type per se.

2) They always make reference to a scalar extent. They do not function well with nongradable properties (cf. Michaelis' example: *How prime is this number!*).

3) They express unexpectedness or surprise. More specifically, they express that the scalar extent expressed is surprising.

4) They are nonassertoric. That is, they do not affirm or deny a proposition.

5) They use a variety of linguistic devices. Like thetics, exclamatives usually do not look like prototypical sentences.

6) They are related to intensifiers —or rather to the operation of intensification—, but intensifiers that can combine with exclamatives are very restricted and specific.

7) Elements meaning 'truly, really' seem perfectly compatible with the exclamative function.

8) Exclamatives are different from comparatives and superlatives.

9) Exclamatives elude performative verbs.

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On the other hand, we also find some points of controversy among the theorists:

1) It is not clear whether exclamatives constitute a sentence type, a speech act or a modality. All three perspectives have been suggested in the literature.

2) It is frequently stated that the content of the exclamative utterance is presupposed. However, as Merin and Nikolaeva have shown, this leads to an odd functional disparity between exclamatives and thetics (which otherwise are crosslinguistically similar). It could be the case that the nonasssertoric character of exclamatives has produced the impression that their content is presupposed. In any case, this issue remains controversial.

3) Several explanations have been proposed in order to explain the similarities between exclamatives and questions. However, the issue remains unclear.

4) The general tendency has been to focus on the similarities between exclamatives and questions, thus neglecting the structural diversity of exclamatives. Some theorists start by analyzing question-like exclamatives, which are perceived as more prototypical, and then extend the analysis to other exclamative constructions. Nevertheless, it seems more appropriate to take the structural diversity of exclamatives as a starting point. Such a task is best suited for a large-scale typological approach, such as the one proposed in the present study.

In this investigation, I will consider exclamatives as sentences conveying surprise with respect to a feature that an entity or a state of affairs posses. This is mainly what distinguishes exclamatives from miratives. Miratives convey surprise with respect to a state of affairs, but they do not involve a scalar extent. That is, miratives express surprise

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towards a state of affairs as a whole; whereas exclamatives are more specific: they express that the scalar extent of a property is surprisingly higher (or lower) than expected.

2.4 The Relationship Between Thetics, Miratives and Exclamatives

The functional similarity between thetics, miratives and exclamatives is often pointed out in the literature. Moreover, there is also a consensus that these functions deviate somehow from the prototypical sentence. Thetics are described in the literature as not performing a predication, that is, as not relating a subject to a predicate in a prototypical topic-comment construction. Similarly, miratives have been described as deviations from an ideal of knowledge (see §2.2). Finally, exclamatives have been regarded often as nonassertive, which is basically the same as arguing that they do not perform a predication. Thus, they also can be considered as deviations from the prototypical topic-comment construction.

On the other hand, these functions are clearly different from one another. In a sense, their points of convergence make them more difficult to grasp. Are miratives simply thetics oriented towards the speaker instead of the addressee, or are there more significant differences between both functions? If both miratives and exclamatives convey surprise, should not we simply consider exclamatives as miratives conveying a scalar extent? If not, what is so special about scalar extent that needs a specific linguistic function? Moreover, at what level of linguistic analysis should we apprehend these functions? Are they better described as information structure configurations, modalities, speech acts or sentence types?

These issues remain unresolved for various reasons such as absence of comparative studies and of comprehensive typological surveys.

I propose that a large-scale typological study comparing these three functions will help to explain them better. I also suggest that the study of these functions must account for structural diversity, especially regarding exclamatives. This of course can only be achieved with a relatively large sample of languages.

I have two main working hypotheses:

I.   Thetics, exclamatives and miratives are crosslinguistically represented by similar structural means. That is, if we compare these functions in a large sample of languages, we will find that the strategies used are similar to a great extent, and also that the strategies will be clearly distinguished according to the function represented (i.e. every function will be structurally distinguishable from the others).

II.   It is important to notice that, although these functions have been associated with the expression of surprise, exclamatives typically convey a greater extent of surprise than thetics and, perhaps, miratives. Thus my second working hypothesis is that these functions form a continuum from thetics to exclamatives, in which miratives stand as a transitional function. Moreover, since one "significant dimension of typological explanation is that explanations of many grammatical phenomena are fundamentally diachronic, not synchronic" (Croft 2003: 3), I hypothesize that the transition between thetics and exclamatives also follows a path of grammaticalization.

Ultimately, the problem of the relationship between thetics, miratives and exclamatives is also related to another more general issue: the relationship between information structure and other linguistic entities, such as sentence types. Since theticity is an information structure configuration, we can expect that the study of the relationship between thetics, miratives and exclamatives will shed light on this issue as well.

CHAPTER 3: DATA AND METHODOLOGY

The aim of the present study is to arrive at typological generalizations that can be explained by principles that are universally present in all languages. Hence, this study is situated in the tradition of linguistic typology, the discipline of linguistics that aims to find, by crosslinguistic comparison, universal principles governing language use. This field of study was reinvigorated in modern linguistics by the work of Joseph Greenberg.[23]

Nowadays, typology is well established as an empirical scientific approach to the study of language. The field has expanded from Greenberg's guidelines to new paths of research, such as the study of grammaticalization (see Croft 2003).

In order to arrive to typological generalizations, typological studies are based on language samples. The construction of a language sample is a theoretical problem in itself. The method for constructing the language sample usually depends on the specific research questions. The guidelines for constructing the language sample for the present investigation are described in §3.1.

An important element of any scientific study is that it must be replicable. A necessary step for the replicability of any study is the operationalization of concepts used in it. The operational definitions of the functions to be compared in this study are given in §3.2.

One particular approach to typology that has been regarded as successful in recent years is the semantic map method. It has proven useful for establishing semantic and

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[23] A compilation of his works is Greenberg (1990)

functional universals. On the other hand, the more customary semantic map method constructs its representations by hand and has some limitations. For these reasons, new approaches to semantic maps using multidimensional scaling have been proposed (Croft & Poole 2008). The semantic map theory and method, as well as the use of multidimensional scaling for constructing semantic maps, are described in §3.3.

3.1   Construction of the Language Sample

There are approximately 7,000 languages in the world. Hence, every typological study is necessarily limited with respect to the number of languages examined. To the usual limitations in the amount of data that a researcher can handle, we can add that only a subset of the world languages has even been described. These restrictions, however, do not justify an arbitrarily chosen language sample. On the contrary, the sample must constitute a statistically valid representation of the linguistic facts to be investigated. Therefore, the construction of the sample must avoid in the first place the genealogical bias —that is, the inclusion of languages that are similar to each other because they are genealogically close. This is basically the reason why the construction of the sample is a theoretical problem in itself. In fact, several studies in constructing a sample of languages have been developed in order to develop specific guidelines for making the sample an accurate tool for typological research.

Samples can be of various kinds. As Bakker notices, "there is no such thing as an all-purpose typological sample. Different kinds of research questions call for different sampling strategies and sample sizes" (Bakker 2011: 103). Generally speaking, samples

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can be of three different kinds: probability samples, variety samples, and random samples. Each kind is used for specific purposes related to the research question.

Probability samples are preferred when the research question "is concerned with the probability that a language is of a specific type. For example, we may want to establish what the chance is of a language being postpositional, prepositional, or neither" (Ibid: 103). In this case, the procedure for constructing the sample is basically to single out independent cases —that is, avoiding including genealogically related languages. For example, if we are investigating adpositions, we cannot include in the sample both Spanish and French, because both inherited from Latin the majority of its adpositions.

> [Probability samples] will be relatively small in size, typically between 50 and 200 languages, and will vary, depending on what is known beforehand about the range of values for the relevant linguistic variables and their stability. This is the preferred type of sample if one wants to apply conclusions drawn from the sample directly to the population in terms of the distribution of the phenomena observed (Ibid: 104).

On the other hand, variety samples are preferred when the research question concerns variables that are less clearly determined in advance, as in the case of the present research, in which we are investigating an unknown relationship between thetics, exclamatives and miratives. As Bakker explains:

> A fundamentally different situation arises when linguistic variables are explored about which not much is known in advance. In such cases, it is precisely the variation among the values for the respective variables that we want to know. For such explorative research, we need a *variety sample* rather than a probability sample. In this type of sample, THE LIKELIHOOD IS OPTIMIZED THAT DIFFERENT VALUES FOR THE RESEARCH VARIABLE WILL BE ATTESTED (Ibid: 104; emphasis added).

Croft (2003) states the following general principle for constructing a variety sample:

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The general principle behind a variety sample is that the best way to capture the full range of linguistic variation is to select languages that have evolved independently from each other for a long enough time to have developed different strategies for the grammatical expression of the phenomenon under study (Ibid: 21).

For the sake of completeness, we will mention a third sampling method, the random sample, which according to Bakker is valid as long as it is applied correctly:

> There is a limited set of typological questions for which a purely *random sample* suffices, provided that it is big enough in the light of the general requirements of parameters which are not (directly) related to genetic affiliation or to areal considerations, and for variables which are highly unstable and show a high level of variation. Apart from that, we may simply be interested in the distribution of linguistic phenomena in their own right and consider each language as a case on its own. For example, in order to find about the relative stability of certain parameters, a first impression may be gained precisely from a sample in which the respective genetic groups are represented proportionally, which will be the case in a relatively large random sample (Bakker 2011: 106).

For the purposes of this investigation, a variety sample is more appropriate since we do not know in advance how structurally diverse the constructions will be—as we noticed in chapter 2, we can expect a fair amount of linguistic diversity, especially regarding exclamative constructions.

In recent years, various methods of sampling have been proposed, some of them using sophisticated statistical approaches (e.g. Perkins 2001). Nevertheless, as Dahl (2008) observes, most sampling methods are constructed *a priori,* that is, "they are based on assumed, rather than observed, effects of biasing factors" (Ibid: 210). For example, they try to avoid the genealogical bias by diversifying the language families in the sample. Yet genealogical classification is a controversial issue:

> Any sampling method that relies on genealogical relationships has to make assumptions about those relationships. This is not a trivial problem. Linguists do not agree on the genealogical classification of the world's languages, and for

some parts of the world the proposals differ to an extreme degree, most notably in the Americas (Ibid: 211).

Practically all existing sampling methods rely on previously established genealogical classifications (e.g. Rijkhoff & Bakker 1998). In this respect, Dahl presents an interesting proposal: constructing an *a posteriori,* instead of an *a priori* language sample*,* that is, developing sample construction guidelines by using already existent information on structural diversity.

For this purpose, Dahl compared the structural traits of the world languages using the data in Haspelmath et al. (2005). Hence he obtained information on the actual diversity of the linguistic areas. With this information, he suggested the areal proportions on table 2, which correspond to a sample using 101 languages.

The construction of the language sample for the present research used Dahl's general guidelines, which were complemented with further considerations. First, genealogical and areal biases cannot be avoided by randomly selecting languages from the macroareas. Thus, in order to minimize the genealogical bias, the sample also maximized genealogical diversity in every macroarea by using the genealogical classifications in Ruhlen (1991) and Lewis et al. (2013).

On the other hand, in order to avoid areal bias (i.e. the probability of languages in the sample to be in contact with one another), the sample maximizes the geographic distance among languages in the same macroarea. For cases of densely populated linguistic areas (e.g. the Amazonia), sources such as Aikhenvald (2002) were consulted to obtain information on language contact.

Macroarea	Number of Languages
Africa	16
Europe	8
Asia	17
Oceania	3
New Guinea	9
Australia	9
North America	19
South America	20
TOTAL	101

Table 2: Distribution for a sample of 101 languages maximizing linguistic diversity. Adapted from Dahl (2008: 215-16).

In spite of all the methodological considerations above, there is another bias that it is difficult —if not imposible— to avoid in constructing a language sample, namely, the 'bibliographical bias':

> Probably the most severe cause of bias is what is commonly known as BIBLIOGRAPHICAL BIAS… over two thirds of the known langauges have not been described at any level of linguistic sophistication. This subset is the opposite of a random selection: it is heavily biased away from the under-explored areas and families. Many of these languages may in fact turn out to be (relative or absolute) isolates or otherwise unique specimens. And even if there is some descriptive material available, this is often sketchy in comparison to the extensive and manifold grammars available for more widely spoken languages, and hard to come by. This state of affairs is very likely to be reflected by the library material available to the individual researcher (Bakker 2011: 106-7).

In our case, the bibliographical bias was heavily motivated by the difficulty of finding the information on the functions investigated. As Bakker observes:

Another complication… typically arises in the case of grammars older than, say, 50 years, when descriptive practice was mainly geared towards phonology and morphology. Such grammars may simply contain no information on many topics which are of great interest to today's typologists, such as constituent order rules and semantic and pragmatic conditions on their application, the distinction between syntactic and semantic roles, the different uses of pronouns, and complex syntactic phenomena such as raising and control (Ibid: 107)

The majority of bibliographical references used in constructing the sample of languages for the present investigation are very recent (with less than 30 years of having been written) in order to maximize the possibility of finding data on information structure and on pragmatics. A 76 language sample was formed using the following criteria: in order to avoid a disproportion in favour of thetics —since miratives and exclamatives are less likely to be reported in reference grammars than thetics— the sample included only languages for which at least one thetic and either one mirative or exclamative construction were reported. Nevertheless, this method did not avoid the skewing in favour of existential constructions. This is due to existentials being reported much more frequently that other thetic subtypes. For several languages, existentials are the only thetic construction reported. Moreover, if the reference grammar reports other kinds of thetics, it is very likely that existential constructions are also reported. Consequently, the majority of thetic constructions in the sample are existentials. The total number of constructions, included thetic subtypes, are described in §4.1 (table 2) for the first analysis and in §5.1(table 4) for the second analysis.

Also, it is worth noticing that the data collection process uses not only reference grammars, but also specific works on the functions compared (i.e. articles describing thetics, exclamatives or miratives in a specific language).

Finally, a criterion of structural diversity was applied for those (rare) cases in which to include one or the other of two related languages was perfectly adequate for the sampling procedure. In those cases, the language having the less common structural configuration was selected. The sample of languages is listed in Appendix 1.

3.2   Operational Definitions

One fundamental principle of linguistic typology is that it is possible to compare linguistic items from different languages. However, this comparison cannot be based on structural traits because linguistic structure usually varies very much from one language to another. Thus, the comparison is only possible in semantic terms:

> The essential problem is that languages vary in their structure to a great extent: indeed that is what typology (and, more generally, linguistics) aims to study and explain. But the variation in structure makes it impossible to use structural criteria, or only structural criteria, to identify grammatical categories across languages. If we did use structural criteria, we would be prejudging the result of our supposedly empirical analysis, by excluding a priori structural types that do not fit our criteria. Hence, THE ULTIMATE SOLUTION IS A SEMANTIC ONE. (Croft 2003: 13; emphasis added).

Therefore, typological studies must use semantic criteria for crosslinguistic comparison. In our case, we must define the functions to be compared. In chapter two definitions of thetics, exclamatives and miratives were presented. However, in order to collect the data, operational definitions of these functions are needed. An operational definition describes the 'operations' by which one arrives at the identification and categorization of the data. In the case of the present research, operational definitions are needed in order to clarify the criteria for considering a construction as a mirative, exclamative or thetic. Moreover, operational definitions are a necessary condition for replicating the study.

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The primary advantage of operational definitions lies in the unification of science and the resolution of controversy. The purpose of science is the simplification of our knowledge of nature under a set of broad generalizations, and the simplification is greatest when laws are stated in a single language, which inevitably turns out to be 'physicalistic'. Scientific controversy seldom involves disagreement about the observed primary data. It occurs usually in connection with the interpretation of the data, arising on the occasion of the validation of concepts or because of the ambiguity of meaning of conceptual entities. Positivistic procedures force such concepts and entities back to their observational bases and thus out of the realm of disagreement (Boring 1945: 243).

Furthermore, the very nature of typological research makes it necessary to operationalize the definitions used: the researcher is not expected to master the languages in the sample, but depends entirely on descriptions given in the reference sources — which, of course, did not anticipate the research questions for which the data would be used.

The operational definitions of the functions coded are given below. Notice that the operational definitions only state English as the description language. This does not mean that we rely only in English sources. On the contrary, for the construction of the sample, sources written in Spanish, French, Portuguese and German were also used. The same criteria listed below were applied to sources in languages other than English.

I. THETICS. In order to be considered thetic in general, a construction must be a declarative, standalone statement (i.e. not a subordinate construction, although it may have structural properties related to subordinate constructions). In addition, every thetic subtype is operationally defined as follows:

a) Existentials: In order to be considered as an existential, the construction must fulfill at least one of the following conditions:

1. It is translated as English 'There is/are X'.

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2. The construction is used to describe the existence of something in rather neutral terms, that is, it only states the existence of something without ostensively conveying that this object is in the context and that it had been previously unnoticed.

b) Presentatives: In order to be regarded as a presentative, the construction must fulfill at least one of the following conditions:

1. It is translated as the English construction 'Here is/are X' (e.g. *Here's John*).

2. It is translated as the English construction 'There/ here X VP' (e.g. *There he goes*).

3. It is translated as the English construction 'THERE is X' (with intonational marking on *There,* e.g. *THERE'S John*).

4. It is the first sentence in a narrative and introduces the characters in it.

5. Its function is to introduce a new topic in the discourse.

6. It points at some previously unnoticed object in the discourse context.

c) Hot news: In order to be considered a hot news statement, the construction must fulfill at least one of the following conditions:

1. It appears to be an 'out of the blue' statement that describes a seemingly unexpected event —at least from the addressee's point of view (e.g. newspaper headings).

2. The source describes the construction as an adequate response to the question: *What happened?,* or to a functionally similar question.

3. The English translation of the construction uses *suddenly* or another element with a similar meaning.

d) Physical sensation: In order to be considered a physical sensation statement, the construction must convey physical pain or another physical sensation of some sort (e.g. *My HAND hurts*).

e) Weather: In order to be considered a weather statement, the construction must convey climate conditions (e.g. *It rains*).

II. MIRATIVES: To be considered a mirative, a construction must fulfill at least one of the following conditions:

1. The construction has a grammatical marking of some sort whose meaning is described as expressing that the whole or some part of the information conveyed was previously unknown or even surprising to the speaker.

2. The translation of the construction can be regarded as specifically expressing surprise, and not merely that the information is unexpected for the addressee (e.g. *why, there is a car!*)

III. EXCLAMATIVES: In order to be considered an exclamative, a construction must be a standalone statement (i.e. not a subordinate construction), which does not have a comparative sense (e.g. a superlative). It also needs to fulfill at least one of the following conditions:

1. It is translated in English as a Wh-Exclamative: *What a slave Mamman is!*,

2. It is translated as an Inversion Exclamative: *Wow, is she nice!*

3. It is translated as a Bare NP Exclamative: *The bad moments I had to endure yesterday.*

4. It is a clear expression of surprise towards a salient property of a particular entity, event or situation.

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5. It is a construction that conveys the salience of a property possessed by an entity, event or situation, in an emphatic manner that is structurally different from a typical declarative statement without having a comparative sense.

6. Its translation is equivalent to the expression *this is a real X!* in the exclamative sense of this expression in English.

7. Its translation conveys that the referred entity possesses the property in question to a degree that surpasses a mere superlative sense, e.g. it is translated as 'excessively', 'utterly', etc., and this construction clearly differs structurally from superlatives in the language in question.

Having established the operational definitions for this investigation, we will now address how the data will be analyzed.

3.3   Data Analysis: Semantic Maps and Multidimensional Scaling

As argued in §3.2, crosslinguistic comparison is only possible on semantic grounds. However, the meaning of linguistic forms is seldom equivalent. On the contrary, linguistic forms always differ in meaning from one language to another. In this respect, three main theoretical positions can be distinguished. First, we find what Haspelmath (2003: 231) labels the 'general meaning' approach, which argues, especially regarding grammatical items, that all the functions that a grammatical element has are derived from a more abstract, general meaning. Lazard's suggestion of subsuming miratives and evidentials under the more general concept of 'mediative' (reviewed in §2.2) is a good example of such approach.

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A second position, which Croft (2010: 10) labels 'extreme relativism', basically claims that crosslinguistic comparison is impossible because all meanings and functional configurations are language-specific. The view of the later Sasse with respect to theticity can be regarded as an example of such theoretical standing (see §2.1.2).

Finally, we have the conceptual space theory (also known as semantic map theory), which suggests that meanings can be conceived as networks of semantic and functional relations. Such configurations are called semantic maps. Although important antecedents of this method are already found in the work of Hjelmslev (1961), the method has been developed only in recent years.

The semantic map model was first proposed in the seventies by Anderson in several pioneer works (1974; 1982; 1986; 1987). He explained the basics of the method as follows:

> The fundamental notion presupposed by any semantic space is similarity of meaning. Highly similar meanings should be close together on a map, dissimilar meanings should be far apart (just as on a map of colors).
> We can determine similarity of meaning typologically, even without an external 'objective' criterion such as that available for color words. If two particular meanings are often expressed by the same surface form (across a random sample of languages), then we can generally infer that the two meanings are similar for the human mind (Anderson 1986: 279).

The semantic map method basically consists of mapping the elements to be compared in a diagram according to the similarity of their meanings. Semantic maps are useful for visualizing functional or semantic similarities between linguistic items. Haspelmath defines the semantic map as a "representation of functions in 'conceptual/semantic space' that are linked by connecting lines and thus constitute a network. The configuration of functions shown by the map is claimed to be universal"

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(Haspelmath 2003: 213). For example, Figure 2 (from Haspelmath 2003: 213) presents a semantic map of dative functions. It includes eight different functions that have been associated with the dative case. Also, it shows the corresponding boundaries for the English preposition *to*. Thus, the diagram shows eight functions that can be expressed with dative markers, and also shows that English *to* can convey four of these functions. On the other hand, Figure 2 (from Haspelmath 2003: 219) represents the same conceptual map, but now delineating the boundaries of two grammatical elements from French: the preposition *á* and the dative pronouns.
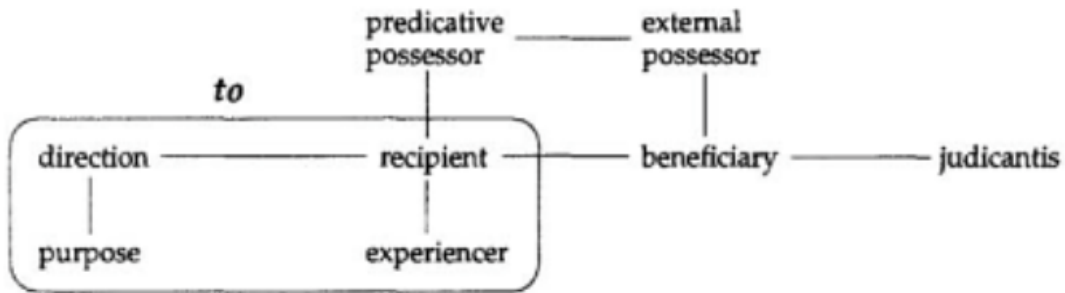
Figure 2: Semantic map showing the boundaries of English *to*.

Hence, the comparison of Figure 2 and Figure 3 shows the similarities and differences in the use of conceptual space between the functions of English *to* on the one hand and French à and dative on the other.
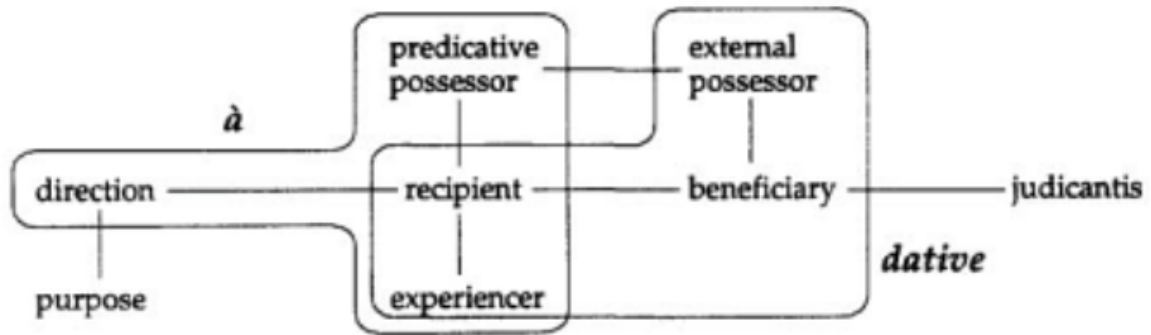
Figure 3: The boundaries of French à and dative.

Another important aspect of the construction of semantic maps is that the functions diagrammed in semantic maps are arranged according to their degree of similarity. For example, in the semantic map of dative functions, direction and purpose are near each other because they are similar to each other (i.e. they are most likely to be expressed by the same construction). In contrast, predicative possessor and experiencer are divided by the function of recipient, which means that they are more similar to this function than to each other. Functions that are adjacent in the semantic map are more likely to be expressed by the same construction.

The semantic map model has several advantages over other approaches. Haspelmath enumerates the following:

1) In contrast to the structuralist approach, which aims to describe systems of oppositions within every specific language, semantic maps facilitate crosslinguistic comparison.

2) In contrast to general-meaning approaches, which aim to describe grammatical meaning in abstract terms, semantic maps describe

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grammatical meaning "in a very concrete way that can easily be discussed, improved on, or proven wrong" (Ibid: 231).

3) Semantic maps avoid the problems of vague meaning and polysemy. For example, it could be argued that French has two different *à*s, a preposition and a dative marker. However, the debate loses relevance when we acknowledge that both functions are adjacent in the semantic map. Hence, "the semantic-map perspective can help us avoid making unnecessary homonymy claims" (Ibid: 232).

4) Semantic maps "do not require the identification of a central or prototypical function (or use or sense) of a grammatical item" (Ibid: 232).

5) Semantic maps "provide objective evidence for which meanings or functions are perceived as similar by speakers" (Ibid: 233).

Furthermore, semantic maps are useful for establishing paths of grammaticalization or diachronic change: "diachronic change is typically directed, and this directionally can be encoded easily on semantic maps" (Ibid: 233).

As a way of illustration, Figure 4 presents the semantic map of functions of indefinite pronouns (from Croft 2010: 6; representing data from Haspelmath 1997). The diagram also shows the boundaries for indefinite pronouns in two languages: Rumanian (solid red boxes) and Kazakh (dotted blue boxes). The nodes represent functions and the links represent relations between these functions. The blue dotted boxes indicate the boundaries of indefinite pronouns in Kazakh. The red boxes indicate the boundaries of Rumanian indefinite pronouns.
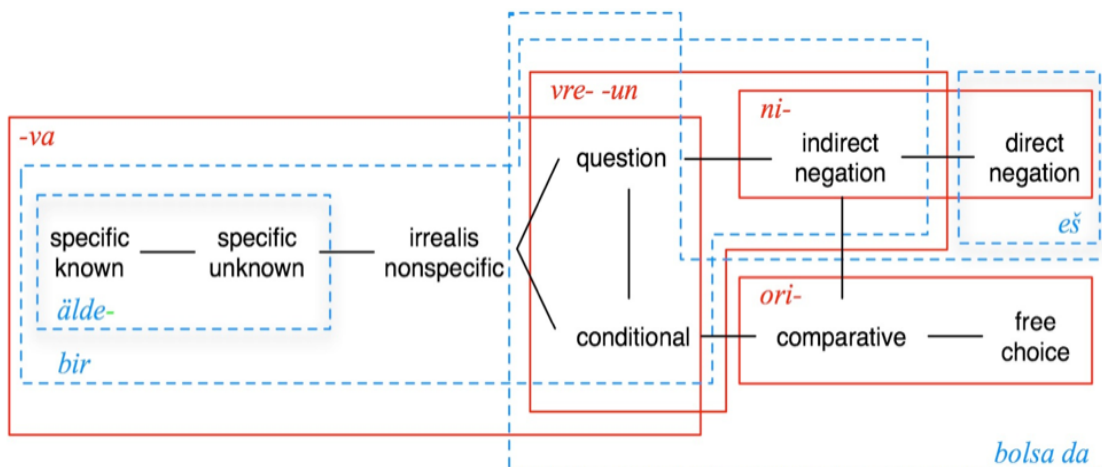
Figure 4: The boundaries for Rumanian and Kazakh indefinite pronouns.

Croft (2001) has proposed to use the term 'conceptual space' to distinguish between the language-specific semantic maps and the universal arrangement of meanings.

> Conceptual space is a structured representation of functional structures and their relationships to each other. I have chosen the term 'conceptual' instead of the term 'semantic' for two reasons. First, I wish to emphasize the fact that the structures are not merely semantic in the traditional, narrow truth-functional sense of that term. Conceptual space also represents conventional pragmatic or discourse-functional or information-structural or even stylistic or social dimensions of the use of a grammatical form or construction […] Second, there are some good reasons to differentiate between a language-universal conceptual structure and a language-specific semantic structure […] I have also chosen the term 'space' instead of 'map' in order to distinguish the universal conceptual space from the map of a particular language's categories onto the space (Ibid: 93)

The present investigation follows this terminology. Thus, I will refer to the language-specific configurations as 'semantic maps' and to the general arrangement of functions as 'conceptual space'.

The semantic map method raises an interesting theoretical question: what is the nature of conceptual space? A stimulating answer to this question is considering

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conceptual space as "the geography of the human mind, which can be read in the facts of the world's languages in a way that the most advanced brain scanning techniques cannot ever offer us" (Ibid: 364). In other words, the mapping of conceptual space can give insights on how the human mind works by representing conceptual structure:

> Each point in conceptual space represents a semantic structure for a particular construction, and the connections represent SEMANTIC RELATIONS AMONG CONSTRUCTIONAL MEANINGS. The connections between points in conceptual space lend themselves to A NETWORK REPRESENTATION OF CONCEPTUAL STRUCTURE, as is found in activation network models of knowledge representation (Ibid: 98; emphasis added).

In summary, "conceptual space represents a universal structure of conceptual knowledge for communication in human beings" (Ibid: 105).

Although the semantic map method has several advantages, it has faced at least one significant limitation: semantic maps for each language as well as the general conceptual-space schema for all languages are usually constructed by hand. This process not only can be slow but also can be unaccurate since it follows a trial-and-error basis: for example, the researcher might start by constructing the semantic map for one language. Afterwards, she analyzes the data from subsequent languages, and then proposes a conceptual space based on the data of the languages analyzed. This is a slow and complex process that significantly limits the number of languages —and functions— that can be handled. For example, Haspelmath (1997) constructed the semantic maps of indefinite pronouns for 40 languages,[24] which from a general perspective is a relatively small

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[24] Haspelmath also used a larger sample for more general research questions, but not for the semantic map analysis.

sample —although it represents a significantly large sample for the standard semantic map method.

Croft and Poole (2008: 6) have observed yet another important limitation of the standard semantic map method: it is not capable of dealing with exceptions. In the traditional semantic map method, all data must be included in the conceptual space. However, this makes the model less informative than a model that could identify instances that should be better treated as uncommon or exceptional. In other words, the standard semantic map method does not have a way to discriminate between statistically valid data and data that must be better considered as exceptional: all information is expected to fit in the resulting conceptual space.

Furthermore, Anderson's original proposal was not only to represent similarity/disimilarity of items, but also the degree of similarity/dissimilarity between them: "Highly similar meanings SHOULD BE CLOSE TOGETHER ON A MAP, dissimilar meanings should be far apart" (Anderson 1986: 279; emphasis added). However, the standard semantic map model represents the degree of similarity/disimilarity between items only in a very schematic way.[25] Take for example the semantic map for dative functions represented in Figure 2 and Figure 3. We can see that direction and purpose are near each other just as recipient and experiencer. Does this mean that direction and purpose are just as similar between them as recipient and experiencer? The map does not inform us exactly how similar the functions are to each other. The graph structure of the

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[25] Cf. Anderson's original semantic maps, which aimed at a more precise representation of the degree of similarity/disimilarity of the elements compared (e.g. Anderson 1974: 55)

standard semantic-map method represents degree of similarity/dissimilarity, but not very precisely (only by the number of lines that separate one item from another).

In one of his articles, Anderson observed the correspondences between the semantic map method and multidimensional scaling (Anderson, 1987: 1). In fact, some authors have implemented the use of multidimensional scaling for constructing semantic maps. Levinson et al. (2003) used multidimensional scaling for analyzing the functions of spatial adpositions in nine unrelated languages. More recently, Croft and Poole (2008) proposed a specific technique of multidimensional scaling using Poole's optimal classification algorithm, and have applied this analysis to linguistic data of several kinds. In the following paragraphs, I will explain in general terms what multidimensional scaling is and why it is adequate for constructing semantic maps; then I will explain the differences between Poole's unfolding algorithm and other multidimensional scaling methods; also, I will explain Poole's technique in more detail. Finally, I will explain how multidimensional scaling will be applied in this investigation.

Multidimensional scaling (henceforth, MDS) is not a single method, but a family of data analysis methods with a long tradition in psychology. "The essential ingredient defining all multidimensional scaling methods is the spatial representation of data structure" (Young 1987: 3).

> [Multidimensional scaling] refers to a class of techniques. These techniques use *proximities* among any kind of objects as input. A proximity is a number which indicates how similar or how different two objects are, or are perceived to be, or any measure of this kind. The chief output is a spatial representation, consisting of a geometric *configuration of points*, as on a map. Each point in the configuration corresponds to one of the objects. This configuration reflects the "hidden structure" in the data, and often makes the data much easier to comprehend. By reflecting the data structure we mean that the larger the dissimilarity (or the smaller the similarity) between the two objects, as shown by their proximity

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value, the further apart they should be in the spatial map. (Kruskal & Wish 1978: 7)

All MDS methods analyze information on the similarity/dissimilarity of items and construct a spatial representation of it. MDS methods construct spatial representations by arranging the data on a set of few dimensions. The data can be arranged even in only one dimension, which will produce a linear representation. It can also be arranged in two or more dimensions (as we will see below, the adequate number of dimensions is the one that best represents the data). As the quotation above explained, one important aspect of the MDS representation is that the points in the diagram have a proximity value, that is, the diagram represents the degree of similarity/dissimilarity between the elements compared. This is a clear advantage over semantic maps elaborated by hand.

Moreover, the MDS spatial map provides more detailed information involving the degrees of similarity/dissimilarity of the elements compared because it is a geometric representation. Thus, two items can appear more proximate or more distant to one another according to the degree of similarity/dissimilarity between them. This represents an advantage over the necessarily limited graph structure of semantic maps.

However, that MDS represents degrees of similarity/dissimilarity does not mean that it can use data that can be described as inserted in a continuum. On the contrary, MDS data must consists only of binary values (i.e. "Yes" or "No"). Hence, the use of MDS with linguistic data requires one to code the data as non-parametric. One way of doing this has been to use a dissimilarity algorithm to establish a similarity/dissimilarity value of the items with respect to each other. The YES/NO values are retrieved from the

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matrix of all the dissimilarity values (this method was used in Levinson et al. 2003). However, as Croft and Poole (2008) have shown, this process does not work very well with lopsided data, and one problem in working with linguistic data is that the data can be too lopsided (for example, some functions can be more well represented by the linguistic forms than others).

A technique that functions better with lopsided data is Poole's unfolding algorithm, which constructs the spatial map directly from the binary values of the data; broadly, this is done "by successive approximations from an initial spatial model to maximize correct classification. For this reason, this type of algorithm can better handle very lopsided data" (Croft 2010: 8). Of course, in order to use this algorithm, the data must be coded in non-parametric form in the first place.[26]

It is worth noticing that Poole originally developed his unfolding algorithm as a tool to analyze parliamentary roll call data. In fact, legislators's votes are restricted to two values: either yea or nay. On the other hand, the implementation of Poole's technique for constructing semantic maps requires one to treat linguistic constructions as legislators, so to speak, which either vote for or against certain function or structural property (i.e. they are either used or not used for conveying the function in question; or they possess or not the property in question). Consequently, the analyst must implement the coding as non-parametric.

In the MDS analyses that Croft and Poole have applied to linguistic data, the functions have been represented as points in a spatial map and each linguistic form as a

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[26] For a detailed explanation of the unfolding algorithm, see Poole (2005).

cutting line separating the functions that the form signifies from those that cannot be expressed with the form in question. Thus, in this technique, semantic maps are represented as a set of cutting lines in a spatial map (see an example in Figure 6).

Of course, conceptual space theory expects semantic maps to vary from one language to another. However, as in traditional semantic maps, the conceptual space on which the semantic maps of individual languages rely will be valid for all languages. The diagrams of cutting lines for multiple languages embody the structure of the conceptual space, which "can be interpreted as representing semantic or functional categories and dimensions relevant to grammar" (Ibid: 12).

MDS also has the advantage of providing statistics of goodness of fit, namely, information on how far the analysis is from the null hypothesis (i.e. how far the results are from having treated the correlation between two variables as null or nonexistent). The goodness of fit is stated as an aggregate proportional reduction of error value, which represents the degree to which the model deviates from the null hypothesis. In addition, the technique also measures the accuracy of the classification of the data (i.e. how precise is the representation of the binary values in the spatial map). The mathematical formulas for obtaining these values are explicated in Poole (2005).

These statistics of goodness of fit play a major role in the interpretation of the MDS analysis, especially regarding the number of dimensions that best represents the data. As Croft explains, "there is a tradeoff between minimizing spatial dimensions and maximizing goodness of fit" (2010: 6). The reason for this is that lower-dimensional spatial models constrain the analysis. If more dimensions are added, the classification can be more accurate but the informativeness is reduced. "The best number of dimensions to

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model the data is essentially the number of dimensions after which the addition of further dimensions yields much smaller improvements in fit" (Croft and Poole 2008: 12). The number of dimensions however is usually low.

> Low-dimensional maps were a common result of MDS applications in psychology by the early 1970s. For example, the experimental data on the perception of color, perception of sound, similarity of Morse code signals, similarity of nations, relatedness among societal problems (war, poverty, crime, etc.), perceived association of psychological traits (honest, helpful, sincere, tolerant, etc.), and similarity of diseases all fit simple two-dimensional maps (Poole 2005: 11).

In the one-dimensional version of the MDS analysis, one obtains a linear ranking because in this case all the variation in the data is 'condensed', so to speak, in only one dimension. On the other hand, in the two-dimensional MDS analysis the outcome is represented as a two-dimensional spatial map where items are represented as points and the degree of similarity/dissimilarity as Euclidian distance between them (see for example Figure 5).

In order to demonstrate how MDS can be used for representing conceptual space, Croft and Poole analyzed Haspelmath's (1997) data on indefinite pronouns. Figure 5 (From Croft and Poole 2008: 15) is the MDS outcome of this conceptual space (cf. Figure 4). Notice the geometric representation of the degree of similarity between the functions. The map represents the degree of similarity/dissimilarity of the functions with respect to one another as Euclidian distance. This is not possible in traditional semantic maps.

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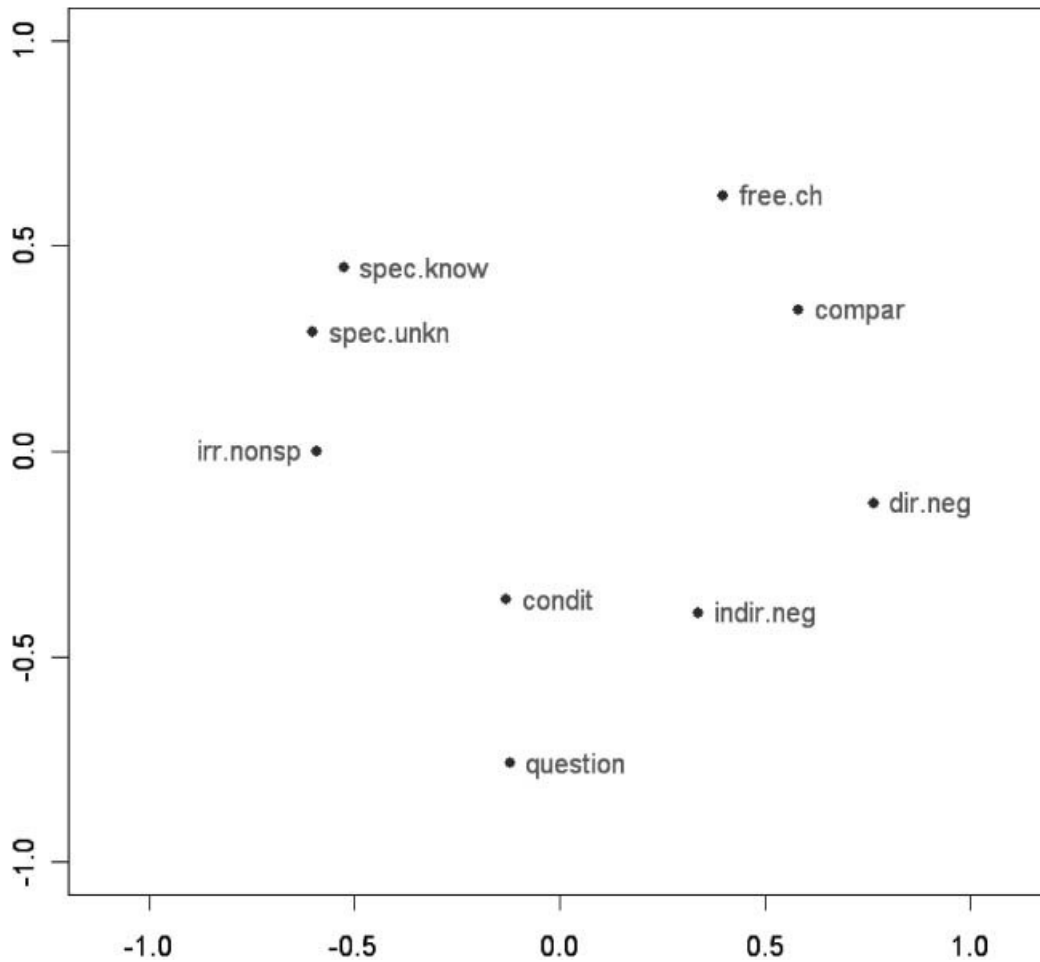
Figure 5: Two-dimensional model of the functions of indefinite pronouns.

As Croft and Poole explain, the MDS analysis of Haspelmath's data on indefinite pronouns has several advantages over the conceptual map performed by hand. First, the spatial representation gives a better idea of the degree of similarity among functions. For example, the diagram shows that the functions of conditional and indirect negation are more similar than Haspelmath's conceptual space suggests. It also shows that comparative and direct negation functions are more similar between each other than comparative and indirect negation. These relationships cannot be perceived when semantic maps are performed by hand.

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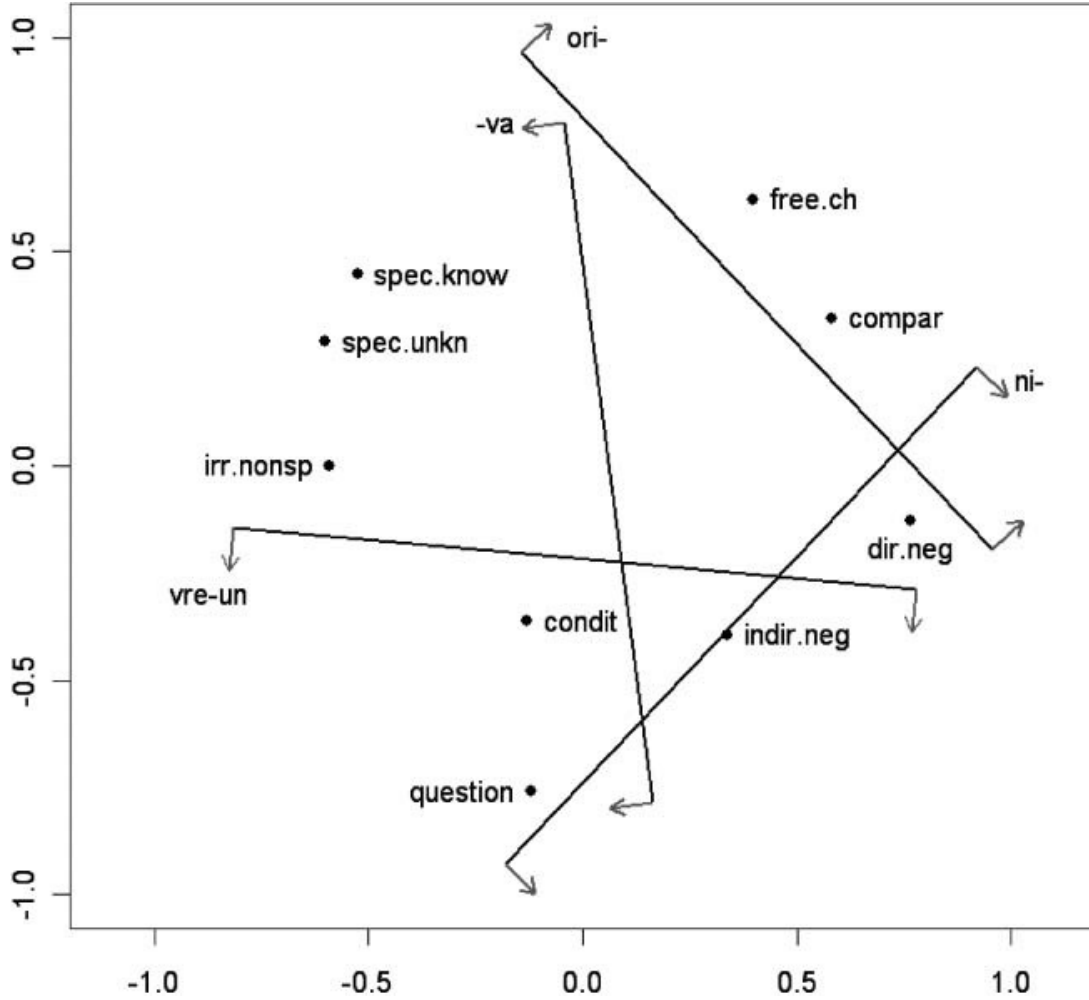
Figure 6: Cutting lines for Romanian indefinite pronouns.

Figure 6 (from Croft & Poole 2008: 16) is an example of the representation of cutting lines in the map for Romanian indefinite pronouns. The cutting lines separate the items according to their binary values. In this specific case, the cutting lines represent the actual Romanian indefinite pronouns, whereas the points in the map represent the functions that these pronouns accomplish. In this manner, the spatial representation establishes a relationships of simmilarity/dissimilarity among functions.

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It is important to note that not all kinds of linguistic data are suitable for MDS analysis. Croft and Timm (2013) enumerate the following characteristics that data must have to be an adequate candidate for MDS:

- Data must be interpretable under criteria of similarity. For example, meanings can be similar to each other if they are expressed by the same construction or grammatical element. In other words, items should be comparable to one another.

- Data must be of high dimensionality and of high variability. If items are compared with respect to only few factors, a computer algorithm is not even necessary to analyze the data. "For example, if one is comparing 100 verbs in terms of how they occur in just four argument structure constructions, the four constructions probably won't divide up the verbs in a very fine-grained way (and the patterns may be perceivable without using MDS)" (Ibid: 2).

It is worth noticing the following criticism that has been made regarding the use of MDS for analyzing typological data, regarding the weight that one language can have over others.

> [In Croft and Poole's proposal] there is normally more than one construction per language relevant. In the [OC] algorithm [...] all constructions are weighted equally, also if there would be, for example, two constructions from language A and ten constructions from language B in the data-set. This would, without correction, give a much greater weight to the structure of language B compared to language A in the comparison. It would be good to at least to have the possibility to check whether such an implicit decision is of any relevance to the results (and I expect that such weighting of the input would be possible to implement in the C&P method – if it is not already available). More problematic is the assumption of C&P that it is possible to neatly distinguish the different constructions from within a language. My impression is that it is often not easy to decide whether a set of comparative concepts is expressed by some closely similar constructions, or whether these constructions should all be treated as the same one (Cysouw 2008: 49).

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According to Cysouw, it is possible for the results of the MDS analysis to be biased by the structure of a specific language. However, this bias is due to the data rather than to the method. Hence, the solution is to limit this bias as much as possible in the coding. In the case of the present investigation, I tried to avoid giving too much weight to the structure of one specific by coding similar constructions of one language as if they were just one (as Cysouw seems to suggest in the quotation above). For example, Enrico (2003) describes several mirative consructions in Haida. Most of them use similar structures (they look like incomplete sentences). After completing the first coding, I realized that Haida was giving too much weight to one variable. In order to avoid this bias in the second analysis, I combined several similar Haida constructions into only a few.

Finally, I will explain some aspects of the specific use of MDS in this investigation. In Croft and Poole's previous MDS analyses of linguistic data, the points in the spatial map (in a two-dimensional MDS ranking) represent functions whereas the cutting lines represent linguistic forms. However, in this investigation we will follow a different procedure: the points in the spatial map will represent individual constructions, whereas the cutting lines will represent properties of those constructions. Information on functions, on the other hand, will not be included in the MDS analysis, but added a posteriori to the spatial map. With this procedure, we aim to demonstrate our first working hypothesis: that the form-function mapping will be consistent (see § 2.4). If this is the case indeed, then we can expect the constructions with similar functions to cluster together, even if the information on functions was not included in the analysis.

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Thus, out MDS analyses will include only structural information. For the sake of clarity, I will repeat here the analogy with the spatial model of voting. Every construction is seen as a legislator. In our case, every construction votes, so to speak, with respect to its constructional properties (*yea* if the construction has the property, *nay* if it does not). In this case, the cutting lines will represent the constructional traits coded (and not the functions). The information on functions for each construction is not included in the analysis, but added a posteriori. In this manner, we expect the MDS analysis to map the functions in conceptual space, showing a coherent form-function mapping.

The next chapter presents the coding procedure, the results of a first MDS analysis and the discussion of these results, including the reasons that led us to perform a second coding and analysis of the data.

CHAPTER 4: FIRST MDS ANALYSIS

As it was indicated in the introduction, two separate codings and MDS analyses were applied to the data. This chapter describes the first MDS analysis. This analysis was not completely unsuccessful, but it had several shortcomings that will be explained througout this chapter. The basic problem was that not all the features coded were represented in the MDS analysis. That is, the analysis represented only a fraction of the information coded. In order to overcome this limitation a second analysis was performed, which is described in chapter 5.

4.1   Coding of the Data

From the 76 languages sample, a total of 397 constructions were extracted. The functional distribution is shown in table 2.

Function	Total of constructions coded
Exclamatives	**142**
Miratives	**33**
Thetics	**222**
Hot news	50
Existential	84
Presentative	33
Weather statement	40
Physical sensation	15

Table 3: Total of constructions coded by function, including thetic subtypes.

It is worth noticing that the form-function correlation presented in table 2 does not account for polysemous structures (i.e. constructions with more than one function). For

these cases, the construction was assigned to the less frequent function in order to diversify the data. For instance, if a construction had an existential and a presentative sense, it was analyzed as a presentative (because existentials are far more common in the data than presentatives). However, recall from §3.3 that the functions of the constructions were not used in constructing the spatial model, but only in analyzing it.

The criteria for coding the structural properties were based on the descriptions of thetics, exclamatives and miratives that can be found in the literature (see Chapter 2) as well as other features that were found in specific languages. The chief principle was to code features that make the construction look less like a prototypical topic-comment sentence (as suggested in Sasse 1987; see also §2.1.2). Four main categories were established: predicate properties, subject properties, intonation features, and other constructional features. The coded features are explained in detail in what follows.[27]

I. Predicate-Related Properties

The first category, predicate properties, refers to the features of the verb in the construction. Four structural properties were coded:

1) **Verbless construction.** The construction lacks a verb. For example, English exclamatives such as *What a surprise!*

2) **Defective verb.** The construction contains a verb, but the behavioral potential of this verb is rather limited. In other words, the syntactic environments in which it can appear are relatively restricted (see Croft

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[27] The coding criteria are illustrated in this section with examples from several languages. Notice however that not all languages cited are part of the sample used for the analysis. For the complete sample of languages see Appendix 1.

2003: 95-100); for instance, it might have restrictions on the morphological paradigm, or it might use a suppletive form for negation. For example, existential constructions in Kagulu can only appear in present tense (Petzell 2008: 165):

(55) Kagulu (Niger-Congo, Bantoid)
Ukaya ukwako **kwina** mgeni.
| u- | kaya | u- ku- ako | ku- in -a | mu- geni |
| 14- | home:14 | IV- 17- 2SG.POSS | 17- exist -FV | 1- guest:1/2 |
'There is a guest at your house'.

3) **Copula or relational element.** This feature refers to the verb being a copula or a relational element, instead of a full lexical verb.

4) **Lexical verb.** This feature refers to verbs that have full lexical meaning.

II. Subject-Related Properties

The second category, subject marking, considers the following properties: presence or absence of a subject, violation of the canonical position of the subject, and structural coding of the subject. Three different properties are considered:

1) **No subject-related properties.** The subject of the construction looks like a prototypical subject: it occupies the subject slot in the sentence and it does not have a special morphosyntactic marking.

2) **No subject.** The construction has no subject (however, it may contain a 'dummy' subject, as in English *It's raining*).

3) **SV Inversion**. The subject and verb canonical position (either SV or VS) is inverted. For example, Hungarian has a canonical SV order, but hot news statements use VS order:

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(56) Hungarian (Uralic, Ugric)
Visszatérésre készülnek   a   szocdemek
comeback   plan   the   Social Democrats
'Social Democrats plan comeback' (Sasse 1995: 183).

III. Other Morphosyntactic Properties

This category includes other properties not specifically related to the subject or the predicate, but that can be considered as deviating from prototypical topic-comment constructions. The following properties were considered:

1) **No further deviation**. The construction does not include any other syntactic properties that distinguish it from a topic-comment construction in the language in question.

2) **Affix.** The construction contains an affix that conveys the thetic, mirative or exclamative meaning. For instance, in Hausa, one exclamative construction adds a suffix to a verbal root. Example (57a) is an adjectival verb, whereas (57b) is an exclamative (Newman 2000: 177)

(57) Hausa (Afro-Asiatic, West Chadic)
a. mā kē kē
   'long and broad'
b. mā kì!
   'How long and broad!'

3) **Particle or clitic.** The construction contains a particle or clitic that conveys the thetic, mirative or exclamative meaning. The particle typically is added to the sentence as a whole. For example, it can appear at the end of an otherwise well-formed declarative construction:

(58) Fongbe (Niger-Congo, Kwa)
Kɔ̀ kú xɔ̀   àsɔ́n lɛ́   (l)á !
Koku buy crab PL   MIR
'Koku bought the crabs!' (Lefebvre & Brousseau 2002: 126)

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4) **Independent subordinate clause.** The construction is formed by a subordinate clause that appears without an accompanying main clause. For example, in Basque, the complementizer that usually introduces a relative clause can appear without a main clause in exclamative constructions.

(59)   Basque (Basque)
Nik   igaro   nayuazan   larriak   bart!
1.ERG endure   AUX.COMP   hard.DET.PL   last.night
'The bad moments I had to endure yesterday!' (Etxeparre 2003: 568)

5) **Noun incorporation.** The noun appears incorporated to a verb or to an adjective. For example, in Somali, we can find an intensifying adjectival construction that is described as "a combination of noun and adjective which functions as a unit like an adjective" (Saeed 1993: 193).

(60)   Somali (Afro-Asiatic, Lowland East-Cushitic)
Waad xoog badan *tahay*
waa-aad   xoog   badan tahay
CLASS-you   strength   much   are
You are very strong' (literally: 'You are much in strength')

6) **Interrogative elements.** The construction uses elements that have interrogative functions like question words or question particles. For example, exclamatives in English such as *What a wonderful evening!*

7) **Deictic elements.** A demonstrative or a deictic element conveys the thetic, exclamative or mirative sense. An example is the following exclamative in Basque:

(61)   Hau   suerte txarra!
this   luck   bad. DET
'Such bad luck!' (Etxeparre 2003: 571).

8) **Polarity marker.** A negative or affirmative particle conveys the mirative, thetic or exclamative sense. For example, Mbili exclamatives use a negative marker without any of the other elements normally required in a negative sentence, such as declarative and progressive markers (Ayuninjam 1998: 369):

(62) Mbili (Niger-Congo, Bantoid)
ŋǧ i (ɨ) ká   (ɨ)n   ttidɨ
world CONN NEG   tough
What a tough world! / How tough life is!

9) **Genitive.** A nonverbal genitive construction conveys the exclamative, mirative or thetic sense. This is the case of an exclamative construction in Basque.

(63) Itsasoaren   zabala!
sea.GEN   wide. DET
The width of the sea! (How wide is the sea!) (Etxeparre 2003: 572)

10) **Intensifier.** In this case, an intensifier codes the exclamative, mirative or thetic meaning. For example, exclamatives in Koyraboro Senni are construed with the lexical class of adjectival intensifiers:

(64) Koyraboro Senni (Nilo-Saharan, Songhai)
a   ga   tar   **batak!**
3SG. SBJ   IMPF be-tasteless INTS
It is very tasteless (Heath 1999: 294).

11) **Complementizer.** A complementizer element appears in an independent clause. This is the case in example (59), cited above, in which the complementizer *nayuazan* appears.

12) **Incomplete phrase.** The construction looks incomplete with respect to typical topic-comment constructions in that language. For example, an exclamative

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construction in Hausa uses the same structure of equational sentences, except for the omission of the relational element (Newman 2000: 165).

(65)   Hausa (Afro-Asiatic, West Chadic)
          Mammàn   bàwā ̀!
          Name   slave
          'What a slave Mamman is!' (i.e., he works like a slave).

13) **Left dislocation.** An element of the clause appears dislocated to the left. For instance, in the following hot news construction in Hausa, the noun *ɓàràayii* appears dislocated:

(66)   Q: Mèe   ya   fàaru?
            what   3SG.REL.PFCT   happen
            'What happened?'
      A: **ɓàràayii**   nèe   su-kà   yi   mîn   saatàa.
            robbers   PTCL   3PL- REL.PFCT do   to.me theft
            ROBBERS have stolen from me! (Hartmann & Zimmermann 2007: 18)

14) **Focus Marking.** An element of the construction is marked as focused, or a morphological element that conveys focus appears in the construction. For example, Oksapmin uses a contrastive focus marker in exclamative constructions:

(67)   Oksapmin (Oksapmin)
          jəx=nəp   jox=**li**
          good=VERY   DEF=**CNTR**
          That's really good *that one*. (e.g. said of the speaker admiring the string
          bag the addressee is making at the time of speech. *li* is a marker of
          contrastive focus) (Loughnane 2009: 173)

15) **Nominalization.** The construction can be considered an instance of nominalization. For example, hot news statements in Musqueam use a nominalized verb:

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(68)   Musqueam (Salishan, Central Salish)
        yéɫ ḿə stécəls.
        yéɫ   ḿə   **s**-técəl-s
        just.now   CERT   **NR**-arrive.here-3POSS
        'He just got here' (Suttles 2004: 99).

16) **Exclamative-interrogative words.** Some languages have a set of

    exclamative-interrogative words that can be translated as interrogative words

    in exclamatives in English, but cannot be used to form a proper interrogative.

    This is the case in Musqueam, which has a set of interrogative-exclamative

    adjectives. In example (69), the word *lék* means 'how fast' in an exclamative

    construction.

(69)   lék   kʷə.
        how.fast   then
        'My, what speed!' (Ibid: 469)

IV. Intonational Marking

This category includes changes in the intonational contour that differ from prototypical

topic-comment constructions in the language in question. It includes the following

properties:

1) **No Data.** The sources do not provide information about the prosody of the

    construction —this was actually the most common case.

2) **Not Prosodically Marked.** The prosody of the construction is not different

    from topic-comment constructions.

3) **Accompanying Intonation.** There are differences in intonation or tone, but

    they do not constitute a sufficient condition for distinguishing the construction

    from a topic-comment sentence. In other words, the characteristic prosody

    merely accompanies other markings. An example is the *What a* exclamative in

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English, which usually has a specific prosodic marking –its intonation contour is different from declaratives– but the construction is also morphosyntactically marked.

4) **Only Intonation.** Prosodic features are the only property that distinguishes the construction from topic-comment constructions. For example, English hot news statements such as the already discussed *JOHNson died* (see §2.1.2).

All categories above were coded as binary values in order to make them suitable for MDS analysis (see §3.3). [28]

4.2   Results

This section presents two different MDS ranks of the data: a one-dimensional (linear) ranking and a two-dimensional ranking. Both ranks will be explained separately.

As was explained in §3.3, the one-dimensional analysis produces a linear ranking of items. In order to analyze this ranking, we split the ranking into six cohorts by the following procedure: we divided the total of constructions by six ($397 \div 6 = 66.1$) and then formed six cohorts of approximately 66 contigous constructions each. Notice that the choice of six is arbitrary. The division was made in order to visualize the one-dimensional ranking as a distribution of constructions into cohorts (see Figure 7 and Figure 8), but of course the number of cohorts could be smaller or higher. In practice, six cohorts allow to visualize the patterns in the ranking without making the visualization too

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[28] I am grateful to Professor Keith T. Poole for having kindly performed this analysis. The spreadsheet with the coding was sent to him by email in February 2012. He sent back two spreadsheets with the results for the one-dimensional and two-dimensional analysis, as well as the correspondent spatial representations of the two-dimensional MDS analysis.

cumbersome (as it would be if using too many cohorts). For this analysis, the

constructions appearing in each cohort were grouped by function (thetic, mirative and

exclamative). The resulting graph is presented in Figure 7.
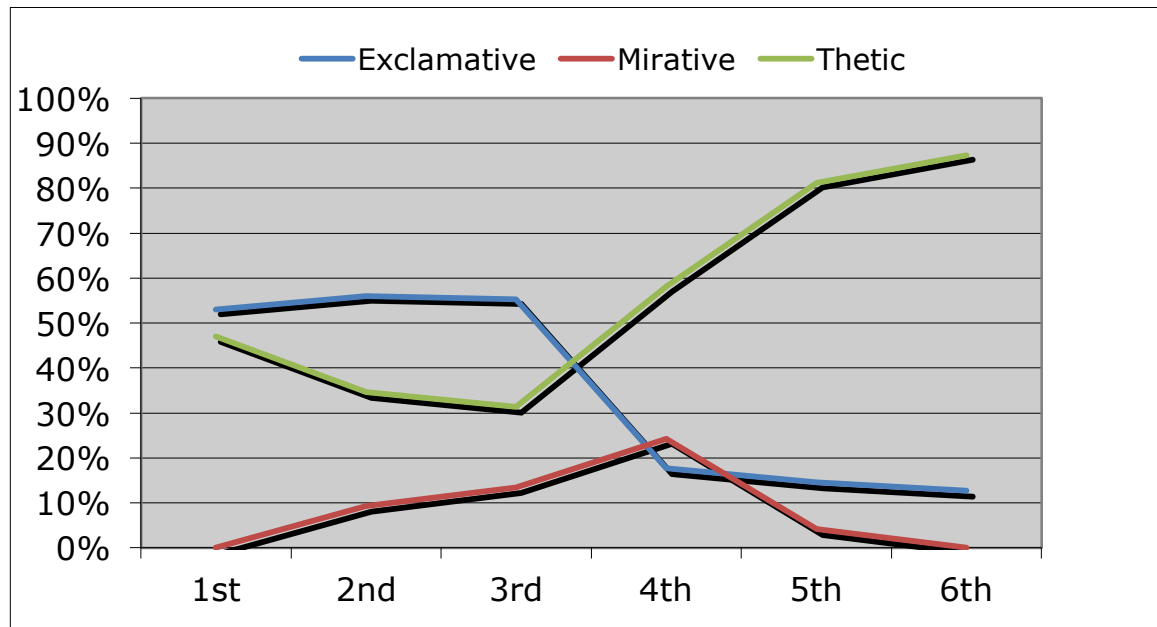
Figure 7: One-dimensional MDS rank divided into cohorts.

As was explained in §3.3, the MDS results require the analyst's interpretation of

the graphic representation. Therefore, MDS is useful to the extent that it can suggest

recognizable patterns to the analyst. Indeed, the graph in Figure 7 shows a clear pattern:

thetics increase mostly at the right of the graph, whereas exclamatives follow the opposite

tendency. Also miratives appear only in the intermediate cohorts and then disappear at

the edges.

The graph in Figure 8 represents the same ranking, but it includes the information

on thetic subtypes.

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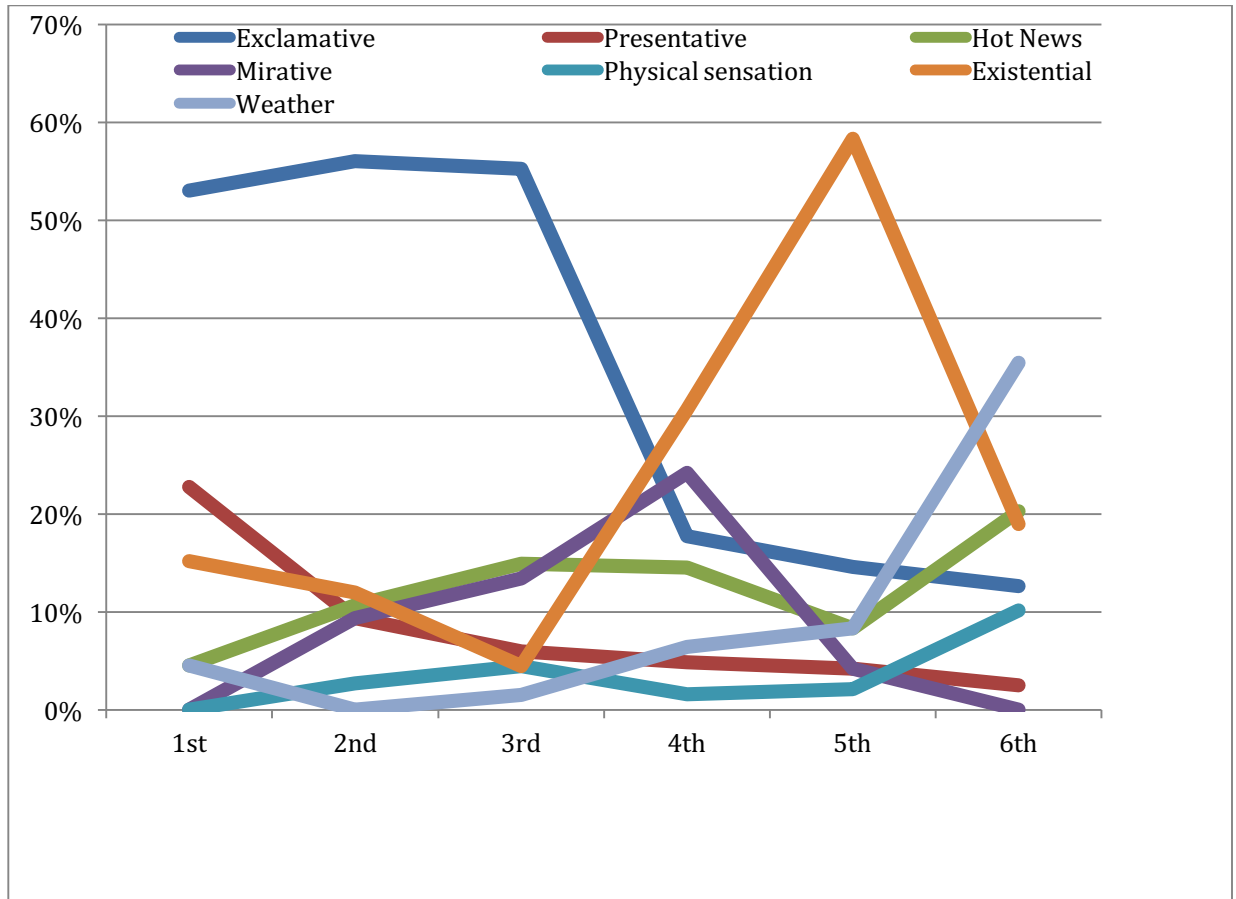
Figure 8: One-dimensional rank including thetic subtypes.

In the graph in Figure 8, it can be noticed that exclamatives increase dramatically towards the first cohort —the only function that follows a similar upturn at the first cohort is presentatives. On the other hand, existentials increase dramatically at the fifth cohort and then decrease at the sixth. The function with the most similar pattern is miratives, but they increase at the fourth cohort. Finally, hot news, physical sensation and weather statements follow similar patterns: all three functions start low at the firt cohort and increase at the sixth cohort.

In summary, the one-dimensional MDS rank shows the following structural similarities for thetic subtypes: presentatives are more similar to exclamatives;

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existentials look similar to miratives; and hot news, physical sensation and weather statements are similar to one another. Thus, the one-dimensional ranking singles out existentials and presentatives as particularly distinct thetic subtypes.

Nevertheless, the above results are tentative because the two-dimensional ranking can still improve the spatial representation. A first important step before examining the two-dimensional ranking, however, is to verify its accuracy. As it was explained in §3.3, Poole's optimal classification unfolding algorithm has the advantage of providing the researcher with statistics of goodness of fit, which in this case are presented as an individual PRE (Proportionate Reduction of Error) value for each coded feature. The information on the accuracy of the two-dimensional ranking is shown in **Table 4**.[29]

For our purposes, we need only be concerned with the first seven columns of table 3. The first column refers to the feature coded. The second column represents the label for each category; these labels appear in the diagram of cutting lines (figure 10) because each cutting line represents a structural feature coded.

From the third to the seventh column, a series of values describe the degree of accuracy of each cutting line. These values should be interpreted as follows.

The label 'correct Yea' refers to the actual number of constructions that were correctly classified as having the feature in question.

The next column, 'wrong Yea' represents the number of constructions that were incorrectly classified as having the feature in question. For example, in the category 'Affix', we can find that one construction was incorrectly assigned to the category.

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[29] Unfortunately, the statistics of goodness of fit for the one-dimensional rank were not provided.

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Category	Label	correct Yea	wrong Yea	wrong Nay	correct Nay	PRE	norm Vector1D	norm Vector 2D	mdpoints
Verbless	P0	71	0	20	306	0.78022	0.89214	-0.451763	-0.540583
Defective verb	P1	31	6	10	350	0.609756	0.44698	0.894545	0.410535
Copula	P2	55	2	5	335	0.883333	0.36938	-0.929278	-0.309253
Lexical verb	P3	209	0	0	188	Y	0.38093	-0.924606	-0.021346
Canonical Subject	S0	335	8	0	54	0.870968	0.98186	0.189604	0.349972
Subjectless	S1	25	0	5	367	0.833333	0.97634	-0.216228	0.6619
Inversion	S2	29	Y	3	364	0.875	0.63398	0.773349	0.428959
Unmarked	C0	140	5	0	252	0.964286	0.91932	0.39351	0.185511
Affix	C1	Y	Y	29	366	0	0.61983	0.784738	-0.628339
Particle/clitic	C2	68	8	0	319	0.882353	0.51198	0.858999	-0.370066
Relative clause	C3	0	0	20	377	0	0.99691	0.078516	0.783285
Incorporation	C4	Y	0	15	381	0.0625	0.70897	0.705234	-0.631331
Interrogative	C5	3	0	27	367	0.Y	0.91506	0.403325	-0.680515
Demonstrative	C6	3	0	40	354	0.069767	0.6045	0.796603	-0.623771
Polarity mrk	C7	NA	NA	NA	NA	NA	NA	NA	NA
Genitive	C8	Y	0	11	385	0.083333	0.79852	-0.601971	-0.612444
Intensifier	C9	12	0	25	360	0.324324	0.93848	0.345324	-0.68422
Complementizer	C10	NA	NA	NA	NA	NA	NA	NA	NA
"Incomplete" phrase	C11	3	0	12	382	0.2	0.52529	0.850922	-0.632567
Left dislocation	C12	NA	NA	NA	NA	NA	NA	NA	NA
Focus marker	C13	Y	0	11	385	0.083333	0.28118	0.959656	-0.644528
Nominalization	C14	NA	NA	NA	NA	NA	NA	NA	NA
Exclamatory-Interrogative	C15	NA	NA	NA	NA	NA	NA	NA	NA
Not prosodically marked	I1	8	Y	0	54	0.875	0.97178	-0.235876	0.21411
Accompanying intonation	I2	49	0	Y	13	0.923077	0.9655	-0.260393	0.204405
Only intonation	I3	0	0	5	58	0	0.25103	0.96798	0.607178

Table 4: Statistics of goodness of fit for the two-dimensional MDS diagram.

The fifth column, 'wrong Nay' represents the number of constructions that were improperly classified as not having the feature in question.

On the other hand, the sixth column, 'correct Nay', represents the number of constructions properly classified as not having the feature.

Finally, the PRE value is the goodness of fit value assigned to each category.[30] Values near to 1 are optimal. A high PRE value means that the corresponding line in the diagram of cutting lines is very informative, that is, the spatial representation of this category has a high level of correspondence with the actual data. On the other hand, a low PRE value means that the category in question is not accurately represented in the spatial diagram, alghouth it is still somewhat informative.

The 'NA' label means that the category in question was discarded, that is, it is not represented at all in the spatial model. The main reason for discarding a category was that it included very few constructions, and consequently, the best choice for the analysis was to not account for it. Notice that five features were discarded in this manner: polarity marker, complementizer, left-dislocation, nominalization, and exclamative-interrogative words.

On the other hand, the following categories have a PRE value of zero or very low: affix, relative clause, incorporation, interrogative, demonstrative, genitive, incomplete phrase, focus marker, and marking by intonation only.

In summary, a total of 16 features were either discarded or had very low information value in the spatial model. Consequently this analysis is not as useful as it could be since it means that only 11 out of 27 features were informative in constructing the spatial model. This of course leaves muchof the coded information outside the scope of the analysis.

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[30] The mathematical formulas for obtaining the PRE values are explained in Poole (2005).

With this limitation in mind, we can proceed to examine the diagram of cutting lines in Figure 9. The labels read as follows: P0: nonverbal construction; P1: defective verb; P2: copula; P3: lexical verb; S0: no subject features; S1: no subject; S2: subject-verb inversion; C0: no other constructional features; C1: affix or clitic; C2: particle; C3: relative clause; C4: incorporation; C5: interrogative; C6: deictic or demonstrative; C8: genitive; C9: intensifier; C11: phrase that looks incomplete; C13: focus marker; S1: no special intonation; S2: accompanying intonation; S3: only intonation. In this spatial model, only the following lines are highly informative: verbless construction (P0), defective verb (P1), copula (P2), lexical verb (P3), canonical subject (S0), subjectless construction (S1), SV inversion (S2), lack of other structural markers (C0), particle (C2), not prosodically marked (I1) and accompanying intonation (I2).

Notice that all predicate properties are accurately represented, which means that in this respect the spatial model is highly informative. Similarly, all the information regarding the subject characteristics is informative.

In respect to the morphosyntactic properties, only two traits are represented: the lack of other structural marking (C0) and the use of a particle (C2). Notice that in this case line C0 is representing all the additional structural traits coded.

In summary, although most coded traits were not accounted for in the analysis, the spatial representation can still give us a coarse-grained view of the similarity relations in the data.

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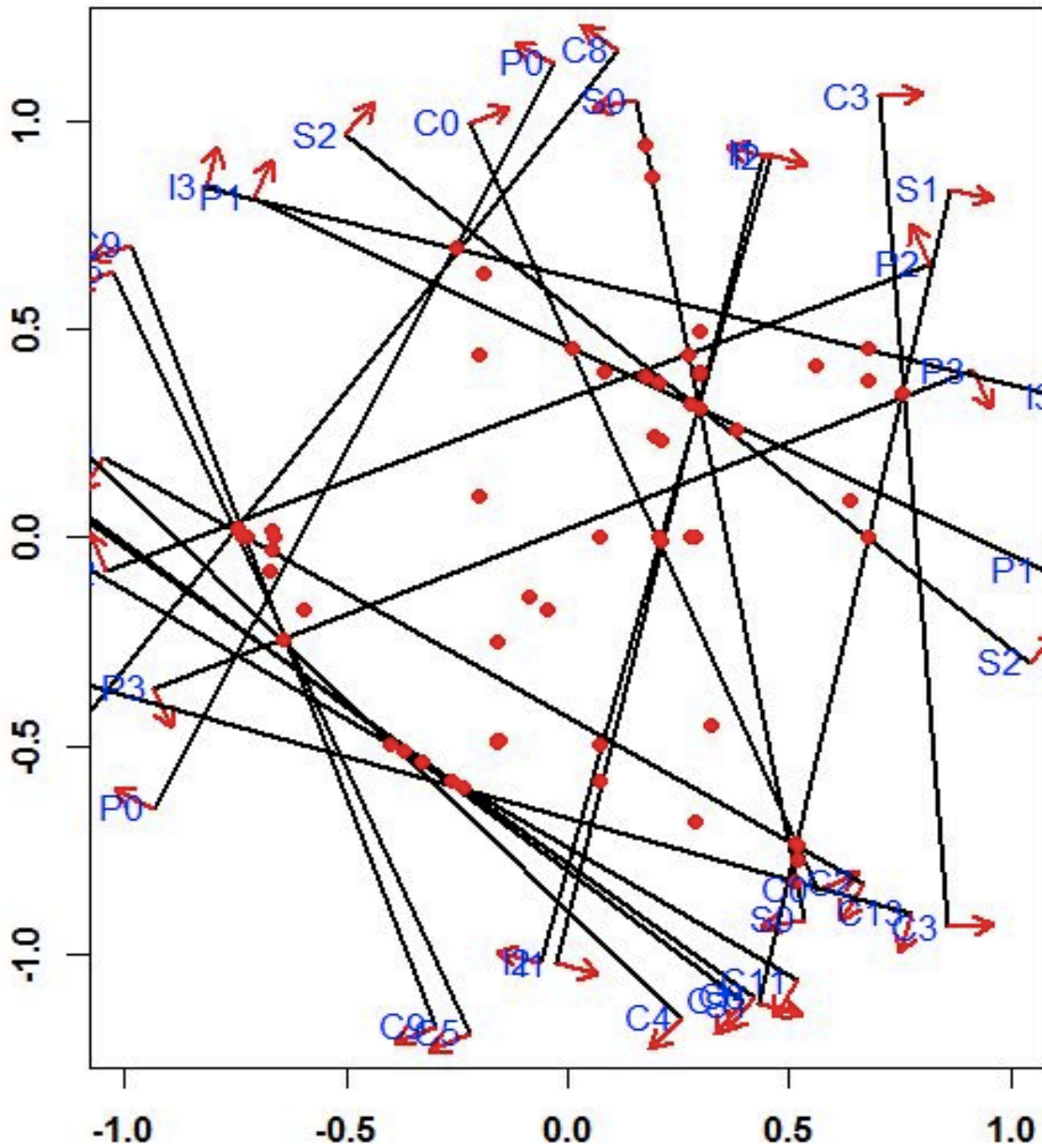
Figure 9: MDS diagram showing cutting lines for the localization of features.
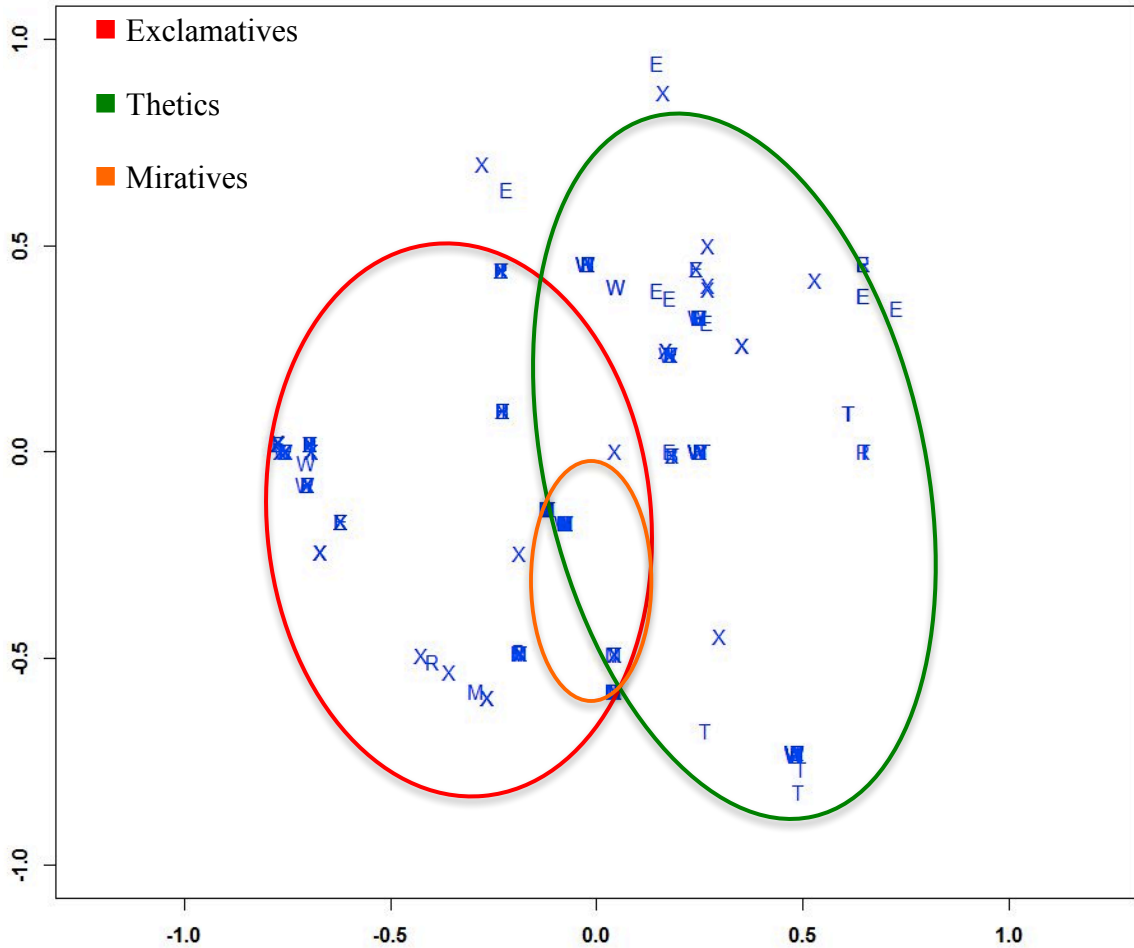
Figure 10: Clusterings of thetics, miratives and exclamatives.

Thus, the MDS two-dimensional diagram is restricted to a set of basic constructional features. The distribution of thetics, miratives and exclamatives can be seen in Figure 10. The labels include information on thetic subytpes, and should be read as follows: B: physical sensation; E: existential; M: mirative; R: presentative; T: hot news statement; W: weather; X: exclamative. Although the diagram contains labels for each function, the clustering of constructions makes many of them illegible. Thus, the information on the distribution of functions was obtained from the direct examination of the two-dimensional ranking data.

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The configuration in Figure 10 is actually similar to that found in the one-dimensional ranking (see Figure 8). Exclamatives are at the right of the diagram, whereas thetics are at the left and miratives are in between.

Figure 11: Approximate clustering of functions in the two-dimensional ranking.

Figure 11 includes the representation of the clustering of thetic subtypes. The inclusion of thetic subtypes shows the following information regarding the similarities between functions:

1) Hot news statements are separated from existential constructions.

2) Weather and physical sensation statements cluster together, as was the case in the one-dimensional ranking. However, they do not show a coherent distribution. Rather, they are concentrated at two points: on the one hand, they converge with existentias; on the other hand, they form a separated group at the right bottom of the spatial model.

3) Presentatives look more related to exclamatives than to any other function.

By comparing Figure 9 to Figure 11, (restricting our interpretation of figure 10 to the more informative cutting lines) it is possible to observe the following:

1) Existentials are singled out by the property of having a defective verb.

2) The weather/physical sensation clusters are motivated by two structural configurations: the cluster at the bottom of the diagram contains mostly subjectless sentences, whereas the cluster near the existential cluster either have defective verbs or do not have any further deviation from a prototypical topic-comment construction (lines C0 and S0). We will return to this issue in §4.3.

3) Most miratives are singled out by the property of having a particle. Moreover, under this property, miratives, hot news and exclamatives converge.

4) In addition to the use of particles, another important structural property of hot news statements is to have SV inversion.

5) Most of the additional structural properties are associated to exclamative constructions (the left side of line C0).

6) The convergence between presentatives and exclamatives is motivated by line P0, not having a verb.

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7) Exclamatives, miratives and hot news statements are more likely to be prosodically marked.

From the above observations, we can extract the following conclusions:

- Exclamatives are more structurally marked than other functions, whereas presentatives are the most marked thetic subtype.

- The use of particles constitutes the point of convergence between hot news, miratives and exclamatives.

- Most existentials use defective verbs.

- The property of not having a subject is typical of weather and physical sensation statements.

4.3   Discussion

The MDS analysis shows a clear a pattern of thetics, miratives and exclamatives in both versions of the analysis. This pattern locates miratives between thetics and exclamatives, which supports our hypothesis of miratives being an intermediate function between thetics and exclamatives.

Nevertheless, this analysis merely provides a coarse-grained representation. A fine-grained representation of the structural properties was not possible since most information is not accurately represented or not represented at all. The reason for this was that the structural traits coded were too numerous, and very lopsided with respect to each other: some categories had many members whereas others merely had a few. This caused the analysis to dismiss the later in order to represent accurately the more balanced categories.

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The problem of the low informativeness of the spatial model is actually grounded in the coding itself, because it used too many properties. In this respect, the coding has two main problems. On the one hand, it is sometimes redundant because some of the properties coded can also be inferred from the negative values of others. For example, the property of having a lexical verb is coded in itself, but it could have been merely inferred from the negative values of other predicate properties (i.e. if a verb is not defective and is not a copula, then it is lexical). Similarly, the property of having an unmarked subject is coded in itself, but it could also be inferred from the negative values of other subject-related properties.

On the other hand, some properties could have been included under others. For instance, it was not really necessary to separate clitics from particles. After all, both are instances of structural coding. Another example is the separation between exclamative-interrogative words and interrogative elements. In practice, the former category is too lopsided to justify its separation from the later.

The spatial model also shows other issues with the coding. For example, while weather and physical sensation statements follow similar patterns —which is not surprising giving the considerations presented in §2.1.4— it seems odd for these functions to share properties with two functions clearly distinguished from one another: existentials and hot news statements. The reason for this being the case is due to a gap in our coding criteria. The coding did not account for nonprototypical subjects; it only accounted for subjecless sentences. Nevertheless, one important feature of weather and physical sensation statements is that their subject is frequently non-prototypical; for example, it consists of an inanimate subject. Hence, this was a shortcoming of the coding

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criteria that motivated weather and physical sensation statements to be represented as rather prototypical sentences in the cluster between hot news and existentials.

To sum up, this analysis only presented a general perspective mostly based on predicate properties and a general notion of structural marking. A more fine-grained perspective was not possible due to the problems with the coding of structural properties of the constructions. In this respect, the problem was not only that too many features were considered as separate categories, but also that some variables were redundant. That is, some features could have been obtained by elimination instead of constituting a variable per se. For example, the information on constructions having lexical verbs could have been merely inferred when a construction obtained a zero value in the remaining predicate features.

Of course, the information in the two-dimensional spatial map was still useful. For example, it established an unexpected structural distinction between existentials and presentatives. As it was mentioned in §2.1.4, these functions are usually regarded as very similar, and the fact that they were structurally differentiated is interesting —especially regarding our considerations on the functional differences between presentatives and existentials presented in §2.1.4. Nevertheless, it was clear that the two-dimensional spatial map misrepresented the data up to certain point, due to the loss of structural information. Hence, our methodological decision was to recode the data —using slightly different coding criteria— and analyze it again. This recoding and the results of the new analysis are reported in the following chapters.

CHAPTER 5: FINAL MDS ANALYSIS

Chapter 4 presented the first MDS analysis of the data. As was argued therein, the first analysis provided a rather restricted view of the relationships between the functions because structural information for most part was not accurately represented in the spatial map. As was explained in Chapter 4, this was mainly due to errors in the coding criteria.

5.1   Recoding of the Data

I established a new set of criteria for recoding the data. The most important modification with respect to the first analysis was the reduction in the number of coding categories. This reduction was achieved by establishing broader categories. In addition, I also used the recoding of the data as an opportunity to remove doubtful cases as well as to address Cysouw's recommendation of not giving too much weight to the structure of one language over other languages in the sample (see §3.3). For this purpose, I coded those constructions pertaining to one language and that were too similar to each other as only one construction. This time, the data consisted of 360 constructions. The amount of constructions per function is given in **Table 5**.

As in the first analysis, the cases of polysemy (i.e. constructions that perform more than one of the functions coded) were assigned to the less represented function in order to diversify the data.

The following paragraphs explain the coding criteria, divided into categories, for the second MDS analysis of the data.

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Function	Total of constructions coded
Exclamatives	115
Miratives	43
Thetics	202
Hot news	*36*
Existential	*75*
Presentative	*33*
Weather statements	*40*
Physical sensation	*18*

Table 5: Total of recoded constructions by function, including thetic subtypes.

I. Predicate Properties

Three predicate properties were established. The property of having a defective verb was maintained from the first coding but this time within a wider scope. The property of using a copula or another similar element was also maintained with a minor change: this time the verbal element was not considered as relational if not linking a subject to a predicate.[31] Hence, the distinction between a copula and a non-prototypical verb was maintained in the second analysis. The property of not having a verb was maintained as well and it is explained under 'other constructional properties' below. On the other hand, the property of having a lexical predicate was discarded since it can be inferred from the negative values of the other categories. Finally, the category of nominalization was added

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[31] Cf. Hengeveld (1992), which considers copulas as such even when they do not appear in a copular construction.

to the predicate properties coded. Nominalization in this case is also a broad category that combines several subcategories from the first coding, as will be explained below.

Following are detailed explanations and operational definitions of the predicate properties coded.

1. Defective verb. This property is rather loose and refers in general terms to the non-prototypicality of the verb. In order to be considered a defective verb, a verb should present at least one of the following properties:

a) Use of suppletive forms; for example, use of one form for the affirmative and a different form for the negative.

b) Limited behavioral potential; for instance, having fewer inflectional morphemes than typical verbs in the language.

c) Being classified as an auxiliary verb or a copula, but used in the construction in a non-relational manner (see below).

d) Being part of a closed paradigm (e.g. verbs of position).

In addition, in order to be considered a defective verb, the element in question must appear as a stand-alone verbal element in the construction (i.e. it must not be a copula linking the subject to the predicate or an auxiliary accompanying another verb).

2. Copula. In order to be considered a relational element such as a copula, the element in question should occupy the position of the verb in the clause and should not have lexical meaning. Its function must be to link the subject and the predicate of the clause.

3. Nominalization. The term 'nominalization' is used here in a very general sense. It covers nominalized verbs and adjectives, but also subordinate clauses (or clauses

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that look like subordinate clauses but lack an accompanying main clause). In other words, the concept combines nominalization in the morphological sense with subordination of any kind. The aim of this category is to cover those structural properties that cause the predicate to be non-canonical for reasons not included in the first two categories.

In order to be considered as a nominalization, the construction must have at least one of the following properties:

1) A properly nominalized element, namely a noun derived from a verb or an adjective.

2) A standalone subordinate clause.

3) A subordination marker.

4) Omission of performative, aspectual, modal, evidential, or other markers that appear in regular topic-comment constructions in the language.

5) Use of subjunctive or a similar verbal marking that usually appears in subordinate clauses but not in independent clauses.

Recall from §3.2 that all instances of the functions coded are standalone clauses. Thus, if the predicate or the construction looks like a subordinate clause, it is necessarily departing from the prototypical topic-comment configuration.

II. Subject-Related Properties

In general, this category refers to the non-prototypicality of the subject. This non-prototypicality can be of two types: lexical or syntactic. Hence, only two general categories for the subject were used this time. From a lexical standpoint, the property of not having a subject was combined with the property of having a non-prototypical subject

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(e.g. an inanimate subject). This was an important improvement over the first coding criteria, which did not accounted for non-prototypical subjects.

On the other hand, from a syntactic standpoint, the category of morphosyntactic marking of the subject combines in one category all the properties related to subject-marking that were coded in the first analysis as different categories such as SV inversion and focus on the subject.

Notice that the property of having a prototypical subject used in the first coding was removed from the second coding criteria because it is already entailed by the other categories. These subject-related properties are explained in more detail below.

1. Non-prototypical subject. This category comprises subjectless constructions as well as nonprototypical subjects. I considered as non-prototypical subjects those grammatical subjects lacking agency and control over the action or event. In the data, this basically applies to inanimate subjects.

It is important to note that, under our coding criteria, a construction does not need to have a verb in order to be considered as having a subject. In the case of verbless constructions, the entity referred to in the construction was coded as the subject.

2. Morphosyntactic marking of the subject. This is a general category that comprises any kind of morphological or syntactic marking of the subject, including the displacement of the subject from its canonical position in the clause.

In order to be included in this category, a subject must appear in at least one of the following configurations:

1) Subject-verb inversion or a similar alteration of the prototypical word order in the language. This category also includes the displacement of elements that refer

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anaphorically to the subject, such as alterations of the order of the subject clitics attached to the verb.

2) The subject is morphologically marked in a way that differs from canonical topic-comment constructions in the language; or conversely, the construction omits a marker for the subject that usually appears in topic-comment constructions.

3) A noun is incorporated into the verb or adjective. That is, the former category of noun incorporation was fully integrated in this category since the actual occurrences of noun incorporation were very scarce in the data.

III. Other constructional properties

This general category aims to include all other properties that cause the construction as a whole to look different from prototypical topic-comment constructions. The following properties were considered: intensifiers, particles, absence of a verb and prosodic marking. These categories are explained in detail below.

1. Intensifiers. This category combines two categories from the first coding: intensifiers and interrogatives. Thus, in order to be considered as having an intensifier, a construction or element should fulfill at least one of the following conditions:

1) It contains an element functionally related to interrogatives, such as question words or interrogative particles.

2) It contains an element that can be translated as 'true', or 'really'.

3) It contains an element translated as 'extremely' or which expresses that a property is possessed to an extreme degree.

4) The construction uses an expressive device that can such as reduplication or ideophones, and this device conveys the functional meaning of the construction.

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5) The element is translated as 'such' or as another intensifier used in exclamative constructions in English.

2. Particles. This category includes all instances of structural coding that are not present in typical topic-comment constructions in the language in question. Hence, this category includes particles as well as clitics and affixes.

In order to be included in this category, the construction must use a morpheme that does not appear in typical topic-comment constructions in the language. This morpheme must convey the thetic, exclamative or mirative function. Also, the scope of the element in question must not be restricted to the subject but must include the predicate or the clause as a whole—if the element only marks the subject, then it is rather coded as an instance of morphosyntactic marking of the subject (see above).

3. Verbless Construction. In order to be considered as verbless, the construction must lack an element that can be regarded as a verb or as a copula. In other words, the slot usually occupied by the verb in the clause must be empty.

4: Prosodic Marking. In order to be considered as having prosodic marking, the construction should have a specific intonation that differs from that of topic-comment constructions in the language.

5.2   Results of the Second MDS Analysis

This time, the data was analyzed using a version of Poole's code in R written by Jason Timm.[32]

Dimensions	Classification	APRE
1	0.901	0.446
2	0.969	0.829
3	0.992	0.954

Table 6: Aggregate Proportional Reduction of Error (APRE) values for the MDS analyses in one, two and three dimensions.

Table 6 shows the Correct Classification and the Aggregate Proportional Reduction of Error (APRE) values for the MDS analysis in one, two and three dimensions, respectively. Both values are measures of fitness. The Correct Classification value refers to the percentage of items correctly classified, whereas the APRE value, as explained in §3.3, represents the accuracy of the MDS ranking with respect to the number of dimensions included. In Table 6 we can notice a fitness improvement from the one-dimensional to the two-dimensional analysis. On the other hand, the improvement is not that significant for the three dimensional analysis. Hence, the present analysis only uses the one-dimensional and two-dimensional rankings —as was argued in §3.3, in using MDS the analyst must avoid increasing the number of dimensions unnecesarily. In this case, a three-dimensional analysis is not necessary because the one-dimensional, and especially the two-dimensional analyses have a satisfactory goodness of fit.

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[32] This version of the code can be downloaded at the following URL: http://www.unm.edu/~wcroft/MDSfiles/OC_Script_For_Linguists_Ver_11-16.r (April 10, 2016)

Although the two-dimensional ranking has a significantly higher APRE value than that of the one-dimensional ranking, we still will examine both rankings in order to obtain a more comprehensive representation —the one-dimensional analysis might reveal aspects that are less noticeable in the two-dimensional analysis. Table 7 describes the accuracy of the one-dimensional representation of the data. We are only concerned with the first five columns of the table. The PRE (Proportional Reduction of Error) value represents the goodness of fit for each category. 'CorrrectYea' states the number of items correctly classified as pertaining to the category. 'WrongYea' states the number of items incorrectly classified as pertaining to the category. 'WrongNay' establishes the number of items incorrectly classified as not pertaining to the category and 'correctNay' establishes the number of items correctly classified as not pertaining to the category. The labels refer to the values coded: C1: intensifiers; C2: particles; C3: verbless; C4: prosodic marking; S1: nonprototypical subject; S2: morphosyntactic marking of the subject; V1: defective verb; V2: copula; V3: nominalization.

	correctYea	wrongYea	wrongNay	correctNay	PRE	normVector1D	midpoints
C1	17	0	42	301	0.288135593	0	20
C2	128	13	0	219	0.8984375	0	124.5
C3	42	1	31	286	0.561643836	0	61.5
C4	47	4	0	23	0.851851852	0	198.5
S1	0	0	62	298	0	0	1
S2	39	0	15	306	0.722222222	0	328.25
V1	0	0	52	308	0	0	1
V2	0	0	33	326	0	0	1
V3	1	0	40	319	0.024390244	0	5.25

Table 7: Accuracy of the classification of the data in the one-dimensional ranking.

In Table 7 we can see that three properties have a PRE value of zero, which means that they are not represented at all in the one-dimensional ranking. These

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properties are S1: having a non-prototypical subject; V1: having a defective verb and V2: having a copula. Moreover, the PRE value of the category V3 (nominalization) is relatively low, which means that the representation of this property in the one-dimensional ranking is not very informative.

On the other hand, the following categories have a relatively high PRE value in the one-dimensional ranking: use of intensifiers (C1), use of particles (C2), verbless constructions (C3), intonation marking (C4) and morphosyntactic marking of the subject (S2).
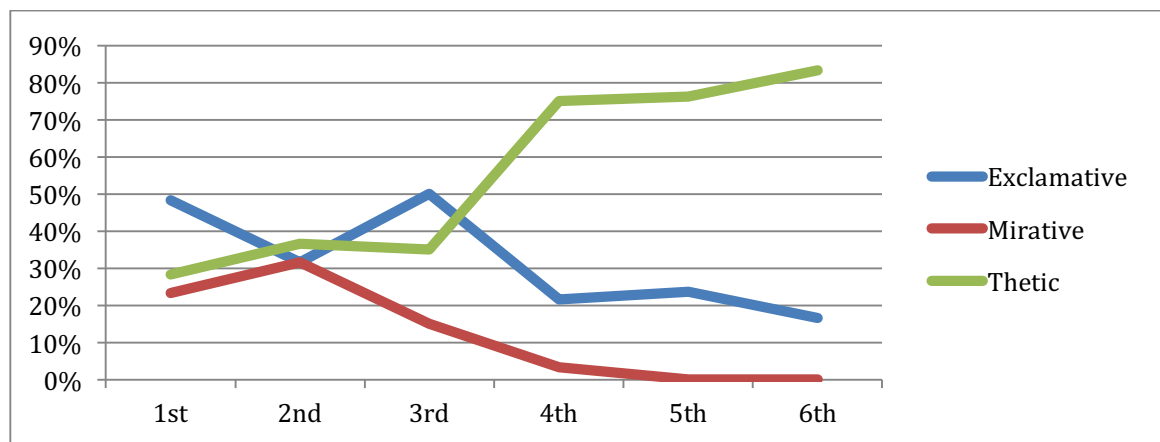
Figure 12: One-dimensional MDS ranking divided into cohorts.

Figure 12 represents the distribution of thetics, miratives and exclamatives on the one-dimensional ranking divided into cohorts. Similarly to the first analysis, the cohorts were obtained by distributing the ranking in six equal parts. Each part or cohort is composed of 60 contiguous constructions. They comprise a total of 360 constructions.

By examining Figure 12 we can note that the form-function mapping is consistent. Moreover, the distribution of functions is clearer than in the first one-dimensional ranking (cf. Figure 7). Thetics clearly increase from the first to the sixth

cohorts, whereas miratives appear at the first cohort, increase at the second and visibly decrease at the fourth cohort. Another difference with respect to the one-dimensional ranking of the first coding is that this time miratives appear at the left of the diagram, thus more aligned with exclamatives (cf. Figure 7, where miratives appear at the central cohorts). This contradicts our hypothesis of miratives representing a transitional function between thetics and exclamatives (see §2.4). We will discuss this fact in §5.3.

Similarly to the one-dimensional ranking of the first coding, exclamatives mostly appear at the left of the diagram. Thus it can be said that thetics and exclamatives follow opposite tendencies.

Figure 13 is a representation of the one-dimensional ranking divided into the same cohorts, with the addition of thetic subtypes. Notice that the distribution of function is better defined than that of the first analysis (cf. Figure 8). Weather and physical sensation statements follow a similar distribution, but this time the pattern is also similar for existentials. Thus, these three thetic functions appear similar to one another in the one-dimensional ranking. Presentatives also show a pattern more similar to existentials than in the first MDS analysis, although both functions show a disparity at the sixth cohort — existentials decrease while presentatives increase. Finally, the most uneven pattern for thetic subtypes is that of hot news constructions: they look similar to miratives, but also increase at the sixth cohort, as presentatives do. Thus, they seem related to both miratives and presentatives.

To sum up, in this second MDS analysis, the most informative structural properties in the one-dimensional ranking were intensifiers, particles, intonation, absence of a verb, and SV inversion. The patterns show the following hierarchy of functions:

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(70)   Physical sensation / Weather > Existentials > Presentatives > Hot news > Miratives > Exclamatives
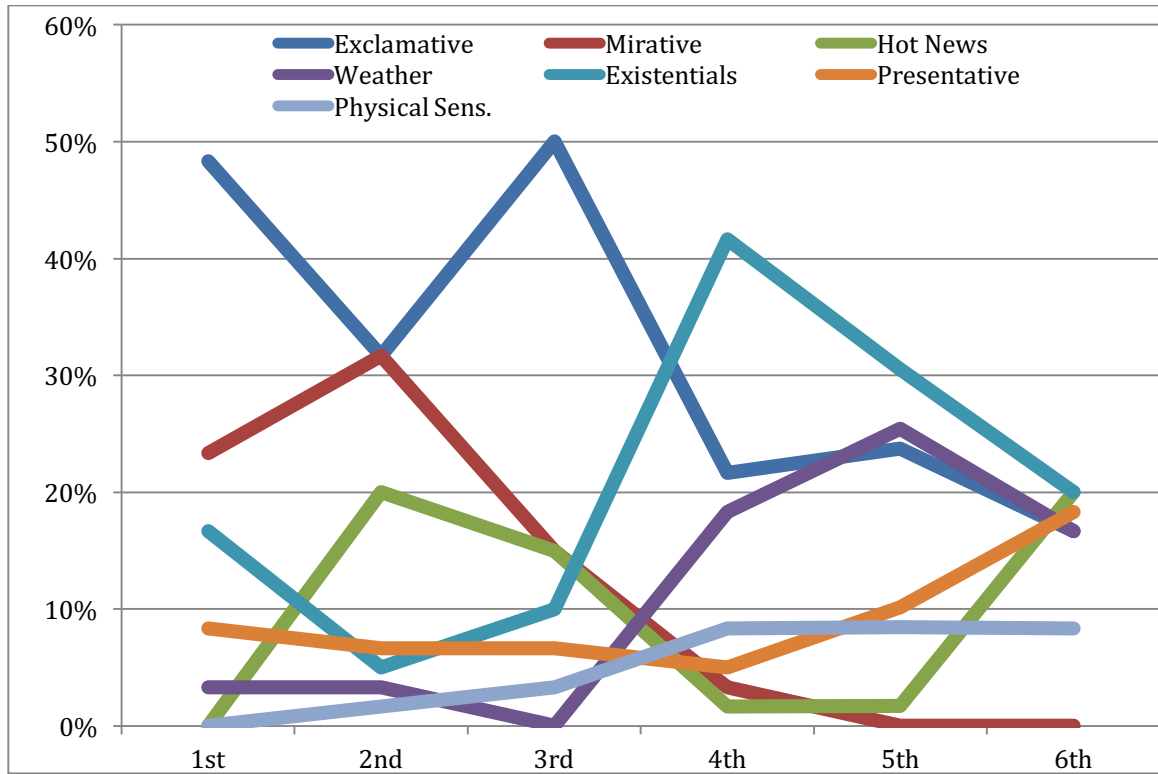
Figure 13: One-dimensional ranking including thetic subtypes.

The hierarchy in (70) is based on the structural complexity of the constructions, and it represents the degree of similarity of the functions. Functions next to each other have the highest degree of similarity. For example, miratives are more similar to exclamatives, whereas hot news statements are more similar to miratives and so forth.

We will now examine the two-dimensional ranking. The two-dimensional spatial map including the cutting lines is presented in Figure 14. The goodness of fit statistics for the two-dimensional ranking can be seen in Table 8.

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	correctYea	wrongYea	wrongNay	correctNay	PRE	normVector1D	normVector2D	midpoints
V1	50	7	2	301	0.826923077	0.884591456	0.466366761	0.373539671
V2	9	0	24	326	0.272727273	0.984251377	0.176774511	0.599438661
V3	15	0	26	319	0.365853659	0.484061346	-0.875034064	-0.419859095
S1	62	0	0	298	Y	0.442788821	0.896625931	0.414096656
S2	47	0	7	306	0.87037037	0.784888073	-0.619637566	0.335406269
C1	58	5	Y	296	0.898305085	0.575072468	0.818102473	-0.279782109
C2	127	0	Y	232	0.9921875	0.80375075	-0.59496616	-0.15182721
C3	73	11	0	276	0.849315068	0.576124536	0.817361927	-0.279722371
C4	46	6	Y	21	0.740740741	0.999110162	0.042176821	0.147292864

Table 8: Goodness of fit statistics for the two-dimensional ranking.

Again, we are only concerned with the first five columns of Table 8. The labels read as follows: V1: defective verb; V2: copula; V3: nominalization; S1: nonprototypical subject; S2: morphosyntactic marking of the subject; C1: intensifiers; C2: particles; C3: verbless construction; C4: prosodically marked. For the explanation of the values referred as 'CorrectYea', 'WrongYea', 'WrongNay' and 'CorrectNay' see the description of Table 7 above. The PRE value is regarded as the value of goodness of fit for each category. Notice that most categories have a high PRE value, which means that their representation in the two-dimensional map is highly informative.Only two categories do not have a very high PRE, copulas (V2) and nominalizations (V3), which means that they are not as informative as the others —although they are relatively informative since their PRE values are not null.

Figure 14 shows the spatial model for the constructions and the cutting lines diagram for the two-dimensional map. The diagram uses the same labels as Table 8 (see the explanation for the labels above).
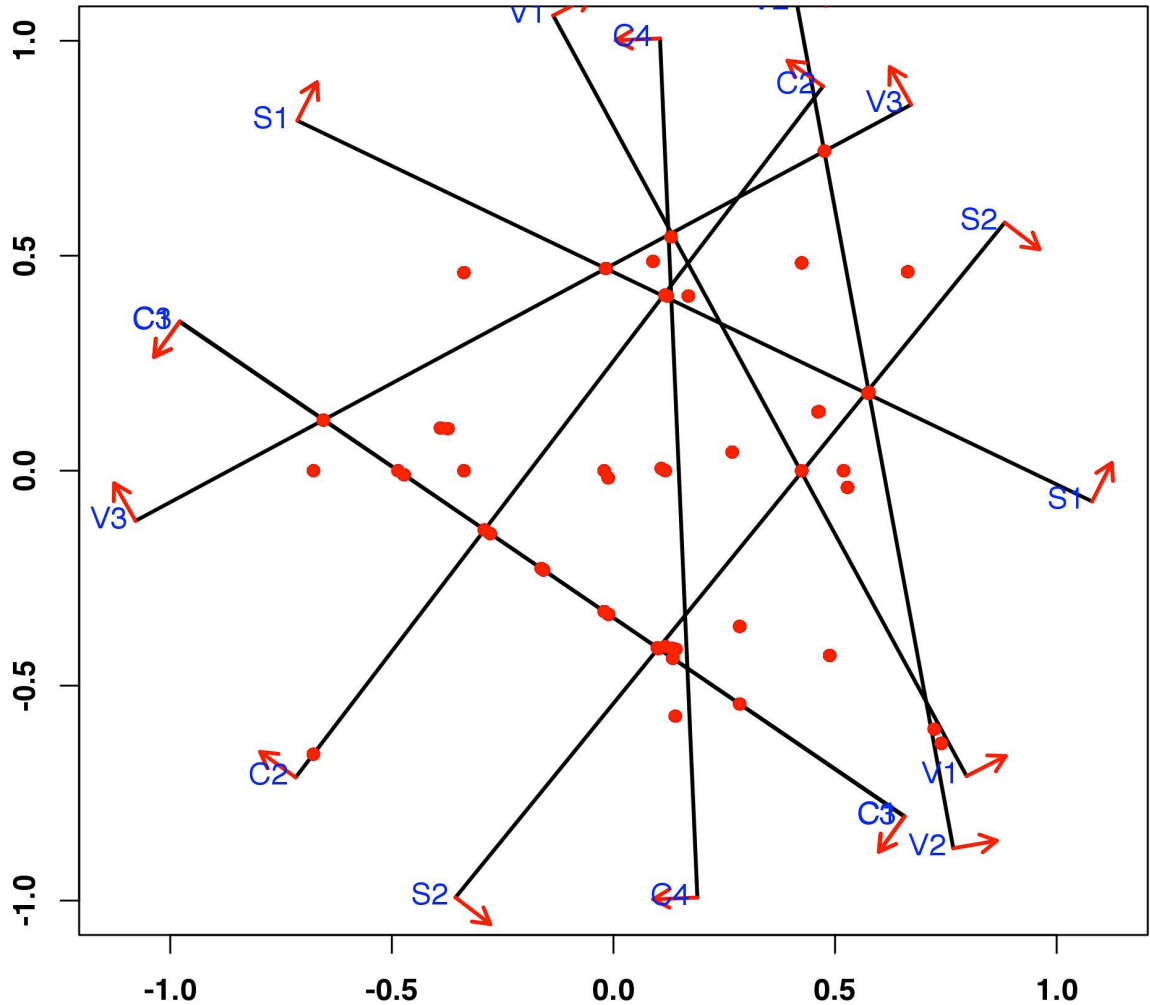
Figure 14: Diagram of cutting lines for the second MDS analysis.

Figure 15 shows the approximate distribution of functions in the two-dimensional map (including the thetic subtypes). The labels for the functions are as follows: E: Existential; B: Physical sensation; M: Mirative; T: Hot news; P: Presentative; W:

Weather statement; X: Exclamative. The distribution shown is approximate and is based on the major concentrations of functions, rather than on an exact allocation of them —an exact distribution would obscure the patterns due to the cases that rather behave as exceptions. As it was argued in §3.3, one advantage of the MDS analysis over the classic semantic map method is that it allows us to deal with instances that are better treated as exceptions, as it is usually the case with constructions that appear isolated in the map (see Croft and Poole 2008).
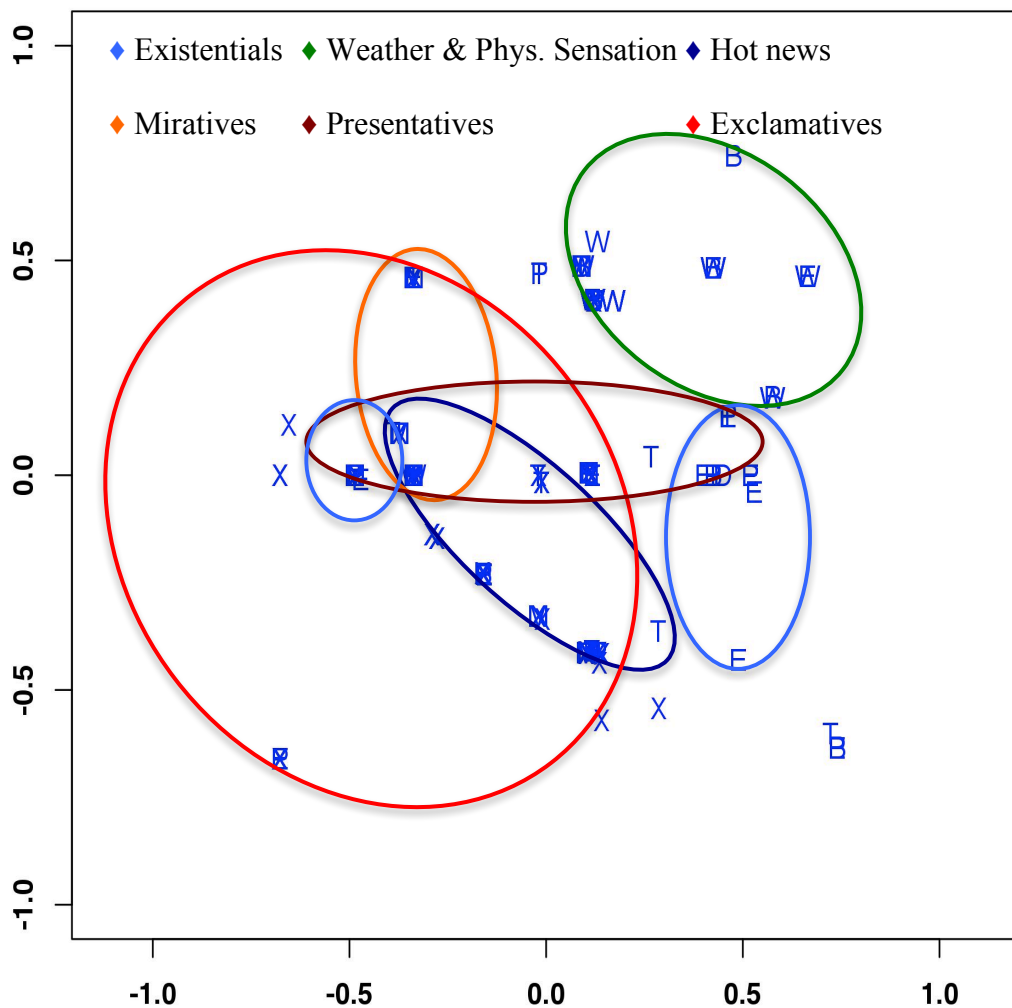
Figure 15: Two-Dimensional map showing the major concentrations of functions.

As can be noted, Figure 15 shows a consistent form-function mapping. As in the first MDS analysis, the information on functions was not included in the analysis but added a posteriori to the spatial map. The consistency of the form-function mapping of course indicates that the functions tend to be distinguished by the same structural properties. This strengthens our first working hypothesis (see §2.4), which stated that the form-function mapping would be consistent. In what follows, I will make some observations regarding the distribution of the functions in the spatial map.

In Figure 15 we can note that, as in the first MDS analysis, exclamatives appear at the right side of the diagram, whereas existentials, weather and physical sensation statements appear at the left. Also, weather and physical sensation statements cluster together, as in the first MDS analysis.

On the other hand, this time we find significant differences with respect to the first MDS analysis. First, miratives do not appear as an intermediate cluster but rather appear aligned with exclamatives (as already noted, this arrangement was evident for the one-dimensional ranking).

Presentatives show a more even distribution than that of the first analysis. This time, they overlap with existentials on one side and exclamatives on the other—whereas in the first MDS analysis they clustered together with exclamatives only (cf. Figure 11).

Existentials appear at two points, a main cluster at the right and a smaller cluster at the left, which overlaps with exclamatives. This secondary cluster is relatively small and is caused by verbless existential constructions. The main cluster at the right is larger because most existentials have a defective verb or use a copula rather than not using a verb at all.

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Finally, the distribution of hot news statements shows a more consistent pattern this time in comparison to the first MDS analysis (cf. Figure 11).

By comparing Figure 14 and Figure 15 we can explain the structural motivations for the patterns represented in the spatial map in Figure 15. First, we can notice that the cutting line C4, which refers to prosodic marking, crosses the center of the map, singling out those functions most likely to be prosodically marked (exclamatives, miratives, hot news and presentatives),[33] and establishing a division between existentials, weather and physical sensation statements at the right and exclamatives and miratives at the left, with hot news and presentatives standing at the center.

On the other hand, the cutting lines related to the nonprototypicality of the verb (V1: defective verb, and V2: copula) single out existentials at the bottom right whereas line S1 (non-prototypical subject) singles out weather and physical sensation statements at the top right. In other words, weather and physical sensation statements generally use non-prototypical subjects, whereas existentials use non-prototipical predicates instead.

While presentatives and hot news cluster together at the middle of the map, they are distinguished from each other by line S2 (morphosyntactic marking of the subject). This is because hot news statements tend to mark the subject morphosyntactically while presentatives tend to lack this structural property. The functional motivation is clear: hot news statements use prototypical predicates more often than presentatives, and thus need to mark the subject as non-canonical in order to convey theticity. Presentatives, on the other hand, already use non-prototypical predicates (defective verbs or no verb at all),

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[33] However, recall from §4.2 that the informativeness of line C4 is limited due to prosodic information being scarce in the data.

hence not needing to cancel the topic-comment interpretation by making the subject look non-canonical.

Thus far we have described the main clusters of thetic subtypes. One important aspect is also that weather and physical sensation statements constitute a rather isolated cluster, whereas the rest of thetic subtypes show less clear delimitations between one another. For instance, existentials look clearly related to presentatives, as if they were part of a continuum. This configuration seems motivated by line V1, use of defective verbs. On the other hand, line C2, use of structural coding, causes presentatives, hot news statements and even miratives to cluster together. Finally, at the left, presentatives converge with existentials and exclamatives because of the property of not having a verb at all, as already mentioned.

Regarding miratives, they rather overlap with exclamatives, which in turn follow two different paths: at the right, they converge with other verbless constructions, namely, existentials and presentatives; whereas at the top they overlap with miratives. The convergence between miratives and exclamatives is largely motivated by line P3 (use of nominalizations).

In respect to exclamatives, they follow three major structural strategies: 1) use of particles and other structural coding, which causes them to converge with miratives, hot news and presentatives; 2) use of nominalizations, which causes them to converge with miratives; and 3) lack of a verb, which causes them to converge with existentials and presentatives. Of course, the feature of using an intensifier —line C1, which in the spatial map overlaps with line C3, verbless constructions— is mainly an exclamative strategy.

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5.3   Discussion

First, we can observe that our first working hypothesis, which stated that the functions would show a coherent form-function mapping (see §2.4), was corroborated. The one-dimensional analysis established a linear hierarchy of functions; whereas the two-dimensional analysis improved the form-function representation. This improvement basically consisted of adding a distinction that was absent from the one-dimensional graph, and that shows the following patterns:

I.   At the right of the spatial map, we find a separation between weather and physical sensation statements, on the one hand, and existentials on the other. The semantic motivation is clear: weather and physical sensation statements refer to events, whereas existentials most commonly refer to entities.

II.   At the center of the two-dimensional map, we find a distinction between hot news and presentatives. This distinction is also semantically motivated: presentatives more likely refer to entities, whereas hot news statements typically announce events.

III. Finally, at the left of the map, we find two opposite tendencies of exclamatives: they cluster with existentials and presentatives at the center, but at the top they cluster only with miratives. The semantic motivation being that verbless constructions are better suited to refer to entities, whereas nominalizations more aptly represent events (recall from §5.2 that this structural properties are separating a cluster of exclamatives from the other).

Hence, the two-dimensional spatial map basically added the representation of the entity-central/event-central distinction already suggested in the literature for thetics (see

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§2.1.2). On the other hand, the horizontal arrangement of functions is also consistent, and actually similar to that established by the one-dimensional ranking. The structural complexity of the functions increases from the right to the left of the diagram. By singling out the event-central/entity-central distinction, the following hierarchies are obtained:

(71) EVENT-CENTRAL STATEMENTS:
Weather and Physical sensation > Hot news > Miratives > Exclamatives

(72) ENTITY-CENTRAL STATEMENTS:
Existentials > Presentatives > Miratives > Exclamatives

Notice that, whereas the vertical arrangement of the spatial map is based on semantic grounds (entity vs. event), the horizontal arrangement is likely based on functional-pragmatic grounds and it is thus more complex and interesting. Thus, we will focus on this arrangement in the following chapters.

To sum up, the results of the second MDS analysis suggest a relationship between thetics, miratives and exclamatives that does not really correspond to our initial hypothesis. In §2.4, we hypothesized that miratives were a transitional function between thetics and exclamatives. This hypothesis was apparently confirmed with the distribution of the first MDS analysis (see Chapter 4). Nevertheless, the results of the second analysis show a different configuration. This time, miratives rather converge with exclamatives, whereas at the center of the map, two thetic subtypes seemingly stand as transitional functions: hot news statements and presentatives.

Thus, from the distribution of functions in the spatial map, it is apparent that miratives are not really a transitional function between thetics and miratives, but rather that the transitional role corresponds to presentatives and hot news statements. In this

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respect, it is significant to recall our argument of weather and physical sensation statements being more prototypical thetics in the sense that their theticity is 'naturally motivated', so to speak, by the situation they represent (they lack clear agency, see §2.1.4). On the other hand, presentatives and hot news statements might be intermediate functions that connect more prototypical thetics to miratives and exclamatives in conceptual space.

This of course would place existentials in the same level as weather and physical sensation statements —since both appear at the same level of the diagram—, thus entailing that existentials are in a sense more prototypical thetics than presentatives. Notice that the structural properties of weather, physical sensation statements and existentials are symmetrical: while weather and physical sensation statements show a tendency to lack a subject or use a non-canonical subject, existentials show a tendency to lack a predicate or using a non-canonical verb.

The above observations open a set of questions that need to be answered. In order to pursue these questions, we will examine the linguistic facts in more detail. As was argued in §3.3, MDS is used in this investigation as a heuristic method, from which a more comprehensive research program has emerged. Thus the following chapter presents a series of case studies and a lengthy discussion aimed to clarify the relationships between thetics, miratives and exclamatives.

CHAPTER 6: THE STRUCTURE OF THE CONCEPTUAL SPACE

As was argued in Chapter 5, the MDS spatial model represents a region of conceptual space in which presentatives and hot news statements are intermediate functions linking the functions of existentials, weather and physical sensation to exclamatives and miratives. In other words, presentatives and hot news have the character of intermediate functions that we first hypothesized for miratives in §2.4. Consequently, a total of four functional-pragmatic distinctions are represented in the spatial map, instead of the three that we hypothesized at first (i.e. thetics, miratives and exclamatives). This was due to the further division between two major thetic subtypes:

1) Existentials, weather and physical sensation statements.

2) Presentatives and hot news.

3) Miratives.

4) Exclamatives.

This chapter will study this region of conceptual space by examining the relationships between these functions as they are realized in specific languages. As was explained in §3.3, MDS is used in this investigation as a heuristic method, which has already provided a 'research program' that we still need to accomplish. The linguistic evidence presented here will support the semantic-pragmatic distinctions established by the MDS analysis. Moreover, this study will expand our understanding of this specific region of conceptual space by adding other elements to the whole picture.

As was noted in §5.3, the spatial model also established a distinction between entity-central and event-central statements. However, this distinction will only be addressed tangentially in this chapter, which will mainly focus on the conceptual

boundaries along the functional ranking described above. That is, we will emphasize the similarities between the structures pertaining to each of the four main functional clusters, instead of looking for their dissimilarities.

Hence, this discussion will focus on polysemous elements because they illustrate better the relationships between functions that are contiguous in conceptual space.[34]

The examination of specific linguistic data does not only demonstrate the accuracy of the conceptual space as presented in the MDS ranking, but also shows that this region of conceptual space is richer and more complex that the spatial map suggest because of the additional linguistic functions that also play a role in it. Moreover, in the course of our investigation, unanticipated theoretical problems surface, and their clarification will shed light on the relationships among the functions and the linguistic processes that occur in this region of conceptual space.

This chapter is divided as follows: §6.1 describes existential, weather and physical sensation statements, focusing on the formal and functional similarities between them, as well as on the specific general function they accomplish; similarly, §6.2 examines presentative and hot news constructions; §6.3 explains the relationships between miratives and thetics at different levels: §6.3.1 shows examples of structural similarities between thetics and miratives; §6.3.2 addresses the issue of mirative meanings, and shows how the distinctions among mirative meanings mirrors the distinction between the major thetic functions explained in the previous subsections; §6.3.3 describes a controversial particle of Lhasa Tibetan and how the connections of mirativity with other

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[34] In the following discussion, I will use examples discussed in the literature along with examples from my own language sample.

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functions in conceptual space can explain its behavior; §6.4 describes two main aspects of exclamatives: §6.4.1 addresses the relationship between exclamatives and thetics, whereas §6.4.2 addresses the relationships between exclamatives and miratives — including the relationships between miratives, exclamatives and other functions. Finally, §6.5 summarizes the chapter.

6.1   Existentials, Weather and Physical Sensation Statements.

In this section, I will present crosslinguistic evidence of structural and functional similarities between existentials, weather, and physical sensation statements and I will argue that they perform basically the same pragmatic function.

First, I will present some examples of structural similarities between the three functions. In Trumai (Guirardello 1999: 339) weather, physical sensation statements, and existentials use the focus particle *ka_in*. In addition, weather and existential statements use the particle *iyi*. Example (73a) is an existential statement. The construction "has a generic sense, with the idea that some event is happening, but we cannot tell which entity is performing it" (Ibid: 338). Example (73b) refers to climate conditions; whereas (73c) is a physical sensation statement.

(73)   Trumai (Trumai)
      a. iyi   ora   **ka_in**
        PTCL   crying   FOC/TNS
        'There is something crying' or '(It) is crying'.
      b. tsi-xu'tsa   **ka_in**   iyi.
        PTCL-cold FOC/TNS   PTCL
        'It is cold' (The weather)
      c. ha   lax   ma'tsi   **ka_in**
        1   nose   hurt   FOC/TNS
        'My nose is hurting'

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Japanese is another language that uses similar forms for existentials, weather and physical sensation statements; all of these functions use the particle *ga*, already discussed in §2.1.2. Notice that examples (74a-b) are also similar in that they use the copula.

(74)   a. Oregon ni yoi   zyuutakuti   **ga**   aru.
                      good   residential-area   be
       'There are good residential-areas in Oregon' (Muromatsu 1997: 258)
      b. yuki   **ga**   hutte   iru
        snow   rain   is
       'It is snowing' (Kuroda 1972a: 181)
      c. Atama   **ga**   itai.
        head   painful
       'I have a headache' (Kajitani, p.c.)[35]

Therefore, existentials can be structurally similar to weather and physical sensation statements. Of course, structural similarity implies functional similarity, at least to some degree. We already have noted the functional similarity between weather and physical sensation statements (see §2.1.4). On the other hand, in respect to the functional similarities between weather and existentials, Sasse (2006: 286) observes that both functions are used in descriptive statements as in the following examples from German:

(75)   a. In den Tälern löste sich der Nebel zögernd auf
       'In the valleys, the fog hesitantly lifted'
      b. Zu dieser Tageszeit waren nur wenige Menschen auf dem Marktplatz.
       'At this time of the day, only few people were on the market place.'

Example (75a) is a weather statement, whereas example (75b) is an existential. Both examples can be regarded as background descriptions according Sasse's former taxonomy of thetics (1987). In his 2006 article, Sasse groups together these thetic subtypes as instances of the descriptive function, for which Sasse gives the following

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[35] I am indebted to Motomy Kajitani for having explained to me several aspects of the Japanese grammar that are relevant for this investigation.

examples of situations: "METEOROLOGICAL EXPRESSIONS, EXISTENTIALS WITH NATURAL PHENOMENA AS SUBJECTS, EXISTENTIALS PERTAINING TO HABITUAL SITUATIONS; beginning, lasting pertaining to habitual situations; beginning, lasting and ending of BACKGROUND SCENERY" (Sasse 2006: 299). Thus, apparently, in this article Sasse acknowledges the functional similarity between existentials and weather statements. On the other hand, regarding physical sensation statements, Sasse classifies them under his 'annunciative function', for which he gives the following examples of situations: "appearance and disappearance, beginning, ending; expected results of actions ('dinner is ready'), mishaps, gleeful news; pain, bodily conditions" (Ibid: 299). Thus, in this article, physical sensation statements are described as being functionally distinct from weather statements and rather similar to hot news statements. However, in the results of the MDS analyses we performed (see chapters 4 and 5) weather and physical sensation were always paired, thus showing that they are very similar to one another. In fact, one aspect in which we can note that physical sensation statements are similar to weather statements is that both functions can be used as background descriptions. Compare the following example to example (75a):

(76)   He was drunk, **his head hurt**, his body still vibrated with the day's drive, and the shock of the brush with the lorry; and it seemed likely that the dyslexia of exhaustion had invaded all his thinking, including his moral sense, making everything backward (Corpus of Contemporary American English: Davies 2008)

Moreover, weather and physical sensation statements show the same versatility than existentials (see §2.1.4) in the sense that they can also appear as out of the blue statements.

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That existentials can have a presentative reading also means that they can have a hot news reading —since hot news and presentatives share the same functional properties, as we will see in §6.2. Example (77) merely constitutes an existential statement, but it does not have the hot news sense of (78).

(77)   the kids are bringing weapons to the schools, and **there are shootings**
        (Description of the bad situation of a neighborhood in New York City)

(78)   telling us to stay on campus and that **there are shootings** on campus
        (A witness's late account of the instructions he received at the moment of the Virginia Tech's shootings in 2007) (Davies 2008)

Similarly, weather and physical sensation statements can appear as background descriptions as well as out of the blue statements, but hot news statements cannot appear as background descriptions.

Furthermore, existentials, weather, and physical sensation statements do not represent prototypical events. The existential assertion typically uses non-canonical predicates. Correspondingly, weather and physical sensation statements typically use non-canonical subjects. This is of course an instance of iconicity —recall Kant's observation of existentials not being truly predicates cited in §2.1.1.

In summary, existentials, weather and physical sensation statements share formal as well as functional similarities. At the structural level, we can find languages that use closely related constructions to convey these functions. At the functional level, these functions have the ability to appear in background descriptions as well as in out of the blue or presentative statements. All these facts imply that these functions are delimited by the same conceptual boundaries, as the MDS analysis implied. Moreover, they also point to a path of ssemantic change that will be discussed in more detail in the next section.

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6.2   Similarities between Hot News Statements and Presentatives

We will begin our survey of presentatives and hot news statements by showing examples

of structural similarities between both functions. Example (79) is a presentative (a new

referent is introduced in the discourse), whereas (80) is a hot news statement (Maslova

2003: 464-65).

(79)   Kolyma Yukaghir (Yukaghir)
āj   tāt   modo-de-ge   irk-in   šaqale-k   kel-u-**l**
[CONN CONN.Adv   sit-3SG-DS]   [one   fox-PRED   come-0-SF]
'While he was still sitting, a fox came'.

(80)   čugōn,   kupec   aduø-k   ōži-ge   loudū-**l**
quickly,   [merchant   son- PRED   water-LOC   fall-SF]
'(Go) quickly, a merchant's son has fallen into the water'.

 In Musqueam, a set of demonstrative auxiliaries is used to construct both

presentatives —such as example (81)— and hot news statements —such as example (82)

(Suttles 2004: 364-65). Both examples use the demonstrative auxiliary *ʔiʔətə*, 'be here'.

(81)   **ʔiʔətə**   ʔí   tə   nə-ə́'n̓ə.
be.here   be.here   ART   my-child
'My son is here [visible]'.

(82)   **ʔiʔətə**   p̓íp̓ələm̓.
be.here   be.overflowing
'It's overflowing'.

As was argued in §2.1.4, regarding the entity-central functions, existentials can

have a presentative reading, whereas presentatives cannot have a mere existential

interpretation. Arguably, an equivalent distinction can be made between the event-central

functions: weather and physical sensation statements can be used in background

descriptions as well as in out of the blue statements, whereas hot news statements are

more specialized and hence have more restricted contexts of use.

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Furthermore, if a language has specialized existential and presentative forms, it is highly likely that presentatives will be structurally more complex. In some cases, the presentative includes the existential verb or particle but also adds more structural coding. We can find one example in English: the presentative use of *there* as in *THERE you are!* is prosodically more marked in comparison to the existential use, and can be considered derived from it.

Another example is found in Itzaj Maya: the presentative construction uses the existential verb but adds a presentative marker. Example (83) is an existential statement, whereas (84) is a presentative construction using the presentative marker *je'lo'* in addition to the existential verb *yan.*

(83)   Itzaj Maya (Mayan)
        Ma'   **yan**
        NEG   EXST
        'There aren't any' (Hofling 2000: 31)

(84)   **je'lo'**   **yan**   jun=kuul naj
        OST-DIST   EXST   one= round house
        'THERE is a house' (Ibid: 299)

Arguably, a presentative reading of existentials motivates the semantic change from existentials to presentatives. In this respect, it is worth noting that there are no cases in the sample in which the existential looks more marked than the presentative, whereas the opposite is common.

Moreover, the semantic shift from existentials to presentatives necessarily involves a certain degree of subjectification —namely, the semantic process whereby the speech participants's perspective becomes part of the meaning of the linguistic elements (see Traugott 1989; Traugott & Dasher 2002). In this specific case, the presentative

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reading can be considered as more subjectified with respect to the mere existential reading because, as was argued in §2.1.4, presentatives indicate that the addressee is unaware of the entity presented at the moment of the utterance. In other words, presentatives —and hot news statements as an equivalent function—are grounded in the speech situation, incorporating the participants's perspective into the meaning. This inclusion of the participant perspective makes them more subjectified forms (see Traugott 1989). Conversely, existentials, weather and physical sensation statements are less contextually dependent and hence less subjectified.

Once we have clarified the major functional distinction between thetics, we can return to a theoretical problem on the description of theticity. In §2.1.3, we noted that theticity has been subject to two different and apparently contradictory accounts. On the one hand, Kuroda suggested that thetics are related to transient perceptions. The following paragraph explains in detail Kuroda's posture regarding theticity:

> In the actual working of the mind, a succession of perceptions… could not just come and go and be kept discrete, they are retained and synthesized into the apprehension of a situation. But by imagining (however counterfactually) possibilities of cognitive events, we can, I am suggesting, grasp the mode of cognition that characterizes the thetic judgment. The referent of a term in a thetic judgment may cognitively exist strictly within the confines of the perception to which it is a direct response. Unless memory or retention intervenes, which of course usually happens in actual cognitive life, the referent of an indefinite term in a thetic judgment… may, I am suggesting, have a very short life-span indeed, in fact a 'time-less' existence, in a relevant sense. If we could abstract away from memory and retention, we could have a succession of thetic judgments of the same form, *a dog running* repeated, each taken as a separate response to a discrete event. In reality such a feat is beyond the capacity of a healthy human mind, but to perform such a thought experiment will, I maintain, help us understand the essential nature of the thetic judgment, which allows an indefinite noun to refer (Kuroda 1990: 84).

On the other hand, for Lambrecht, thetics either introduce a new discourse referent or report a new event (1994: 336). Kuroda and Lambrecht's accounts are contradictory because the introduction of new referents in the discourse involves the active attention of speaker and addressee, whereas in a transient perception the entity or event in question is not necessarily the focus of attention. However, this apparent contradiction disappears once we recognize that thetics basically perform two distinct functions: one related to transient perceptions (e.g. background descriptions) and other involving the active attention of speaker and addressee towards the entity or event presented (e.g. hot news statements). In other words, Kuroda's formulation describes better those thetic subtypes such as existentials and weather statements that can be used as background descriptions; on the other hand, Lambrecht's formulation is more adequate for explaining presentatives and hot news statements.

In his article from 1987, Sasse proposed the term 'existential assertion' to refer to the kind of assertion that thetics perform. I suggest using the term 'presentational assertion' to distinguish between asserting the existence of an event or an entity —which can constitute background information—, and the presentation of an event or an entity that presentatives and hot news statements explicitly perform.

To sum up, presentatives and hot news are functionally similar because, in order to be felicitous, both require the unawareness of the addressee with respect to the event or entity that is introduced as new information. This means that they are more specialized — and more subjectified— than existentials, weather and physical sensation statements.

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6.3 Miratives

As was argued in §6.2, thetics accomplish two pragmatic functions: the existential assertion, related to background information, and the presentational assertion, which introduces new referents or states of affairs in the discourse. It was also argued that, hot news and presentational statements are more subjectified forms than existentials because the former incorporate the participants's perspective in their meaning. This suggests a path of subjectification in which presentatives can even be derived from existentials. This path is supported by crosslinguistic evidence, as was noted in §6.2.

Our next research question is whether this path of subjectification also applies to miratives. Thus, the following subsections will examine several aspects of mirative constructions that will shed light on the structure of the conceptual space suggested by the MDS analysis. We will proceed as follows: in §6.3.1 we will examine instances of structural similarities between miratives and thetics. In §6.3.2 we will study the similarities between miratives and thetics on a more abstract level, that of the correspondences between mirative meanings and thetic functions. Finally, §6.3.3 is a case study of the copula ḥdug in Lhasa Tibetan, which will is a good example of the contiguity between theticity, mirativity and exclamativity in conceptual space.

6.3.1 Structural Similarities Between Miratives and Thetics

Significantly, the instances of structural similarities between miratives and thetics can only be found, apparently, in presentatives and hot news statements, that is, in the thetic subtypes that are closer to miratives in conceptual space.

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In some languages, presentative and mirative functions use similar constructions. For instance, Lavukaleve (Terrill 2003: 287-88) uses verbless constructions with subject focus to convey both functions. Example (85) is a presentative construction introducing the characters in a narrative. On the other hand, example (86) is a mirative expressing surprise at the discovery of the identity of the referent. Both clauses are verbless and both use subject-focus marking, the difference being that the mirative construction also uses an emphatic marker —which of course makes the construction more expressive.

(85)   Lavukaleve (Solomon Easts Papuan, Lavukaleve)
        Vo'voul lelemal finala
        Vo'vou   -l   lelelmal   **finala**
        Boy   - DU   two.M   3DU.M.FOC
        'There were two boys.'

(86)   Aka   ruia feo ke!
        Aka   ruia   **feo**   ke
        Then   old.woman(F)   3SG.F. FOC   EMPH
        'So it's an old woman!

Biblical Hebrew is another example of a language that uses the same construction for presentatives and miratives. The function of the discourse marker *hin·nē(h)* is generally presentative. It is typically translated as 'here', or 'here I am' or 'behold'. Another function of this marker, however, is "to focus attention on events that are surprising or unexpected for the person addressed or the characters in a story" (Van der Merwe et al. 1999: 330). For example, in the Book of Genesis, when one of Joseph's brothers unexpectedly finds in his sack the money they have already paid in Egypt for food, the narrator reports the event using this particle:

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(87) *way·yip̄·taḥ*   *hā·'e·ḥāḏ*   *'eṯ·śaq·qōw,*   *lā·ṯêṯ*   *mis·pō·w*
      opened   one   his sack   to give   fodder
      la·ḥă·mō·rōw   *bam·mā·lō·wn; 1*   *way·yar*   *'eṯ·kas·pōw,*
      his donkey   the lodging   saw   his money
      wə·hin·nêh-hū bə·p̄î   *'am·taḥ·tōw.*
      and-behold-he the mouth   of his sack
      'But as one *of them* opened his sack to give his donkey feed at the encampment,
      he saw his money; and *there it was*, in the mouth of his sack.' (Gen 42:27)

In addition to presentative and mirative constructions that look similar, it is also

possible to find hot news statements that are similar to miratives, and even polysemous

elements conveying hot news and mirativity. This is the case of the suffix *dee* (with

allomorphs *mee* and *nee*) in Crow (see Graczyk 2007: 328-29). Example (88) uses this

suffix to describe a sudden, out of the blue event:

(88)   Crow (Siouan)
       hilam-**nee**-m   hileen   iísuukaatee-sh   chissáa-(a)k   dúu-laa
       sleep-MIR-DS   these   mice-DET   return-SS   come-SS
       kalatchí baláx-ak   diss-úu-k   baláx-uua   aa   bachée-sh
       again   sing-SS   dance-PL-DECL   sing-PL   until   man-DET
       itchée-m
       wake.up-DS
       'he was sleeping, and what do you know, these mice returned, they came,
       they sang and danced again; they sang until the man woke up'.

Graczyk specifically states that, in this case, *dee* cannot have a mirative

interpretation: "*dee* cannot be referring to the man's surprise or amazement, since he was

sleeping when the mice returned and it was only after they sang and danced that he woke

up" (Ibid: 330). Thus, this is a hot news statement. On the other hand, the mirative use of

dee is exemplified in sentence (89):

(89)   baaku-ss-aw-aka(a)-áh-**mee**-m   bii-koosáhta-kaatt-aa-(a)k
       above-GOAL-1PRN-see-PNCT-1PRN.MIR - DS   1PRN-close.to-DIM-CAUS-SS
       bii-ikaa-(a)k   daachí-k
       1PRN -see-SS   remain- DECL
       'I looked up and to my surprise he was located close to me, he kept
       looking at me'.

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The shift of meaning from presentatives and hot news statements to miratives indicated in the constructions cited above conforms to Traugott's tendency I of semantic change since, by this process, the constructions acquire a meaning based on the speaker's own evaluation of the situation:

(90)   Meanings based in the external described situation > meanings based in the internal (evaluative/perceptual/cognitive) described situation (Traugott 1989: 34).

In conclusion, it is possible to find examples of miratives that apparently have originated from presentatives and hot news statements. This shows that these functions are contiguous in conceptual space. Moreover, the shift of meaning from presentatives and hot news to miratives instantiates the same process of subjectification described in §6.2 for existentials (i.e. from existentials to presentatives).

6.3.2   Mirative Meanings and Thetic Functions

In §2.2.1, we noted one issue that has been pointed at in the literature on mirativity: that of the possible distinctions among mirative meanings. In this subsection I will address this issue by examining languages having more than one mirative construction. I will also argue that the distinction that can be found in mirative meanings mirrors the existential-presentative distinction described in §6.2.

In order to analyze the distinctions among mirative meanings, I will follow Aikhenvald's (2012) strategy of examining languages having more than one mirative construction. For this purpose, I will construct a sample of nine languages that will include the languages described in Aikhenvald (2012) as having more than one mirative as well as the languages having more than one mirative construction in my own language sample.

In her investigation, Aikhenvald used a small set of Sino-Tibetan languages that reportedly have more than one mirative. I will examine these languages to see what distinct mirative meanings can be established. In addition to Aikhenvald's sample, I will use a small set of languages from North and South America that reportedly have more than one mirative and that are part of the language sample I constructed for this investigation.

The languages to be examined are the following:

1) Four Sino-Tibetan languages cited in Aikhenvald (2012): Galo, Dhimal, Balti, and Lisu —notice that none of these languages was included in the language sample used in this investigation.

2) Five Native-American languages that are part of the language sample used in this investigation: Aguaruna, Chipaya, Haida, Jarawara and Trio.

We will start with the set of Sino-Tibetan languages. The information on these languages was obtained from Aikhenvald (2012) and the references therein.

The first Sino-Tibetan language to be examined is Galo, which has two different mirative particles. The first one, *la(a)ka*, "indicates a speaker's attitude of surprise or astonishment, usually at the information reported in the marked clause, but potentially also at the addressee in connection with some aspect of the marked information" (Ibid: 457). On the other hand, a second mirative particle, *ɲi,* is described as conveying that the information is 'previously unknown' or 'unexpected' (Ibid: 459). Aikhenvald's explanations do not really establish a distinction between the meanings of both particles, while the original source (Post 2007: 646) labels *la(a)ka* as a mirative, and *ɲi* as a

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'discovery particle', which is explained as having originated from an inferential marker (see below).

Example (91) uses *la(a)ka* for describing a surprising event: "the speaker is reacting in astonishment and disapproval at an event unfolding as he speaks" (Post 2007: 634).

(91)   Galo (Sino-Tibetan, Tani)
        azèn=gə   jesì   tíi-dùu   **la(a)ka**
         friend-GEN   urine   imbibe-IMPF   MIR
        '(The pig) is drinking his friend's urine, of all things!'

Notice that *la(a)ka* conveys surprise at a sudden perception. In contrast, the use of *ɲi* conveys surprise that results from a more elaborated process:

> Discovery *ɲi* […] marks the information as PREVIOUSLY UNKNOWN […] and/or UNEXPECTED and which has JUST BEEN DISCOVERED, or which some unfolding set of circumstances (including a process of deduction) suggests to probably be the case. As such, it may also have a mirative overtone, expressing a shock-like reaction to an unfolding and/or unanticipated state of affairs […] It may be variously translated as 'it turned out that *x'*, '(he) found/discovered/realized that *x*' or 'it thus seemed that *x*' (Ibid: 646; emphasis added)

Post gives the following examples of the use of *ɲi*:

(92)   əgə̀   mə́ə-nam=əə   caina   aràa
        ANA.IND   think-NR:RL=TOP   China   inside
        tolò   ee=**ɲi**
        DIST.LOC.UP   COP.PFCT=MIR
        'So this...if you think about it...must have taken place up in China.'

(93)   *occìk*=go   bəə́-tó-là(a)   bəə̀-m   uŋŋàa
        knife=IND   carry/hold-PFCT-NFNL   HDST.DOWN-ACC   baby
        bə̀-m   kíi-là(a)   dó-dùu-kú-nà=əə   **ɲi**
        DST.DOWN-ACC   slice-NFNL   eat-IMPF-COMP-NR:SBJ= COP. IMPF   MIR
        Taking a knife, she slices off a piece of the baby and eats it, IT TURNS OUT.

While *la(a)ka* in example (91) describes an 'out of the blue' event that is surprising per se, example (92) expresses a 'deferred realization', that is "a post-factum

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inference made on the basis of something that the speaker had previously witnessed but only later could realize what it had meant" (Aikhenvald 2004: 202); that is, the mirative sense in this case depends on the speaker's former assumptions on the state of affairs (i.e. the surprise cannot be motivated by a mere 'out of the blue' event, as it seems to be the case with *la(a)ka*).

In example (93), the translation of *ɲi* as 'it turns out' also implies some active expectations on the part of the speaker.[36] In general terms, it seems safe to assume that the contrast between both mirative forms in Galo is based on an opposition between a sudden surprising event for which the speaker did not have any former expectations and an event for which the speaker had specific assumptions or expectations that were different from the actual outcome.

The second instance of a Sino-Tibetan language having more than one mirative is Dhimal. It has two mirative morphemes: *la* and *sa*. In the original source, *la* is explained as giving "a sense of change or newness to a proposition" (King 2009: 248). This is illustrated in example (94), whose context is given below:

> a woman selling rice beer and snacks by the roadside might use the mirative particle *la* shortly after discovering that she no longer had any eggs, but might drop it in favour of the simple negative existential if someone inquired about eggs later on in the day. The mirative could also still be used later on if the speaker chose to emphasise the fact that there were eggs previously, but they have now run out (Ibid: 248).

(94) Dhimal (Sino-Tibetan, Dhimalic)
      manthu   **la**.
      NEG.EXST   MIR
      'There isn't any more'.

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[36] Post does not provide more context for this example.

Also, in narratives, *la* highlights "a proposition as new and therefore of potential importance to the story" (Ibid: 249).

(95) kalau   wa   jeŋ-hi   **la**.
      So   3s   become-PST   MIR
      'And so then he was born'.

However, *la* does not seem to convey surprise from the speaker's point of view, but rather new information from the addressee's perspective. None of the examples of *la* given by King are miratives in the sense of being a expression of the speaker's surprise towards a previously unknown state of affairs; rather, they appear to be hot news statements. Hence, *la* cannot be considered a mirative according to the operational definitions presented in §2.2.

The second marker described as a mirative in Dhimal is the morpheme *sa*, which "is employed when the speaker suddenly becomes aware of some proposition and is SURPRISED OR IN DISBELIEF." (King 2009: 251, emphasis added). Notice that in this case the definition corresponds to a proper mirative. Examples (96) and (97) express the speaker's surprise towards a unexpected state of affairs.

(96) dhemal-lai   katha   phərra   mare-**sa**-khe   ru!
      Dhimal- PL   language   flowingly   kill-MIR- IMPF   EXCL
      'Why, it seems [he] speaks Dhimal fluently!'

(97) rem-pha   gwamgwam-pa   ca-**sa**-hi.
      Be.good-do   heartily-do   eat-MIR-PST
      'It seems he really ate with gusto (the poor thing must have been starved)' (Ibid: 252)

Therefore, only *sa* qualifies as a mirative in a strict sense, whereas *la* might be better regarded as a hot news marker.

Another Sino-Tibetan language that is described as having two miratives is Balti. In this language, there are two mirative particles: *le* and *suk* (Bashir 2010: 17-19). Example (98) uses *le* for expressing surprise regarding a sudden, out of the blue perception:

(98)　Balti (Sino-Tibetan, Bodic)
　　　gilít　　bazaar iŋ.nu　xlaŋ.pho.čho čik　　yod　　**le**
　　　Gilgit bazaar inside elephant　　INDF　is　　MIR
　　　'There is an elephant in Gilgit bazar' (surprise at seeing such a sight).

On the other hand, the second mirative morpheme, *suk* "expresses that [the speaker] was not fully informed of fact (sic) he communicates in the sentence" (Lobsang 1995; cited in Bashir 2010: 18). This particle is used in example (99), where "the second clause *ŋa-la ma tshor* '(but) I was not aware of it,' is an overt spelling out of the sense of *suk*, […] the sentence would carry this sense even without this explication" (Bashir 2010: 18). Notice that the meaning of *suk* can be rendered as 'deferred realization', as in the case of the Galo mirative reviewed above.

(99)　ahmat　　　natpa　　　yot-**suk**,　　ŋa-la　ma　　tshor
　　　Ahmad　　　ill　　　　be-was　　　me-to　NEG　aware
　　　'Ahmad was ill, but I was not aware of it.'

To sum up, Balti has two mirative morphemes, *le* and *suk*. The former expresses surprise towards an out of the blue event, whereas *suk* has a sense of 'deferred realization', by which the speaker expresses that her previous assumptions about the situation were incorrect.

The last Sino-Tibetan language described in Aikhenvald (2012) as having more than one mirative is Lisu. According to Yu (2005), this language has three mirative constructions: the particle $\gamma \varepsilon^{55}$, the question marker $l\varepsilon^{21}$, and the marker $b\underline{\varepsilon}^{33}t^h\varepsilon^{21}$.

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The particle $\gamma\varepsilon^{55}$ is used at the discovery of a state of affairs that is contrary to the speaker's expectations, as in the following example:

(100)　Lisu (Sino-Tibetan, Burmese-Lolo)
a^{55}sa^{33}mi^{55}　　　gua^{33} tho$^{21}\gamma^{21}$　　so^{33}　tia^{55}　si^{21}
Asami (third daughter) that　book　　　learn　DUR　IMPF.yet
$\gamma\varepsilon^{55}$
MIR
'Asami is still studying [the speaker presumed that Asami would have finished her study].' (Yu 2005; cited in Aikhenvald 2012: 461)

Similarly, the question marker $l\varepsilon^{21}$ indicates that the event is contrary to some active expectations, the difference being the pragmatic environment of these markers: the marker $l\varepsilon^{21}$ only can appear in questions. In example (101), the speaker conveys that the event is contrary to specific expectations:

(101)　na^{21}　ba^{35}　la^{33}　**lε^{21}**
2PL　father　come　INT.MIR
'Did your father come [the speaker expected that someone instead of the father would come]'.

While both $\gamma\varepsilon^{55}$ and $l\varepsilon^{21}$ convey that the event is contrary to former expectations, another mirative construction in Lisu, $b\varepsilon^{33}t^{h}\varepsilon^{21}$, conveys surprise at an out-of-the-blue perception. This marker is formed with the verb $b\varepsilon$, 'to say' and a tense-aspect-mood marker:

(102)　ji^{35}　　　za^{21}nø^{33}　　gua^{33}　na^{21}　tō^{55}sa^{55}bi^{21}di^{33} thε^{215}　go^{33}
ONOM　child　　　that　TOP　caterpillar　one　pick
tε^{35}　si^{55}　ji^{55}　mγ^{21}lγ^{35} ga^{33}　xo^{21}　a^{33}　be^{33}　je^{33}　tia^{55}
hold　SEQ　3SG　mouth　LOC　put　STAT　Adv　do　DUR
bε^{33}t$^{h}\varepsilon^{21}$
MIR
'Goodness! The child was holding a caterpillar and trying to put it into his mouth'

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Hence, in Lisu it is also possible to find a distinction between miratives referring to an out of the blue event, and miratives conveying that a state of affairs is contrary to former assumptions or expectations.

To sum up, three of the Tibeto-Burman languages described in Aikhenvald (2012) as having more than one mirative show a distinction between surprise at the discovery of an extraordinary state of affairs and surprise at learning that a state of affairs is contrary to former assumptions about it.

We will continue our investigation by examining four Native-American languages having more than one mirative: Aguaruna, Chipaya, Haida, Jarawara and Trio.

Aguaruna has three different mirative constructions: a mirative copula (*ya*); the omission of the declarative marker, and a marker that specifically conveys counter-expectation (*hama*). The mirative copula expresses visual discovery, as in (103). The omission of the declarative marker has a similar meaning: the marker is omitted at seeing something surprising or exciting, as in (104), which "was uttered by a child on seeing a dog on the roof of a building" (Overall 2007: 480).

(103)   Aguaruna (Jivaroan, Jivaroan)
tuna-ya
waterfall-COP:3:EXCL
'It's a waterfall!' (Ibid: 240)

(104)   yawaã yakĩ   puha-wa
dog   above live+IMPF-3:EXCL
'There's a dog up there!'

In contrast to the expressions of surprise at a sudden discovery noted above, Aguaruna also has a counter-expectation marker, *hama,* which appears "when the speaker judges that the information conveyed is new, surprising or COUNTER TO THE EXPECTATION

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of the addressee" (Ibid: 375; emphasis added). Notice however that the explanation is referring to the addressee's expectations and not the speaker's, which suggests a hot news function rather than a mirative one. This is in fact the case in example (105), which was uttered by a shopkeeper when being asked whether he has any rice to sell. He answers negatively using the counter-expectation marker. Overall explains this example as follows: "this is not a situation in which he [the shopkeeper] has just learned of the fact – he was not looking for rice, because he knew there was none" (Ibid: 472).

(105)   atsa-**hama**
        exist:NEG+IMPF:3-MIR
        'There isn't any!'

Nevertheless, we can also find examples in which *hama* has a proper mirative sense. This is the case in example (106), which is part of a narrative: "a woman has been lost in the forest and suddenly finds herself back in her own garden" (Ibid: 375). The character expresses her surprise using *hama*.

(106)   húu mína ahahuaháma
        hu   mi-na   aha-hu-a-**hama**
        PROX   1SG-ACC   garden-1SG-COP-MIR
        'This is my garden!'

Notice that example (106) is contrary to the speaker's expectations: *hama* conveys a mismatch between the speaker's expectations regarding the state of affairs and the actual outcome —the particle *hama* is not merely expressing the discovery of the garden, but that the speaker was expecting to be at a different place.

Example (107) has the following context: a man recounts his experience as a boy who wanted to be admitted to the school where his father was currently learning to read. However, the teacher had doubts regarding the boy's abilities. In order to show the

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teacher that the boy was ready for school, the father asked him to read aloud to the teacher. The sentence with *hama* is quoting the teacher's utterance, expressing surprise at realizing that the boy already knows how to read (Ibid: 565). Notice that *hama* in this case is used in relation to the teacher's active expectations about the matter.

(107) nuni-taĩ   auhu-a-**hama**   dɨka-a-**hama**
       do.that- SBR:1/3:DS   read-IMPF:3- MIR   know-IMPF:3- MIR
       tu-sã   kaʃini   naŋkama-sa-mɨ-ka
       say-SBR+3:SS tomorrow   begin-SBR-2:SS-FOC
       auhu-sa-tata-mɨ   papi-ka   tu-hu-tu-i-amayi
       read-ATT-FUT-2SG:DECL   book-FOC   say- APPL-1SG.OBJ-LOAF-DIST:3:DECL
       'When I did that, saying "he is reading! He knows how!", (the teacher) said to me "starting tomorrow you will study"'.

Thus, Aguaruna also confirms the mirative distinction established by the Sino-Tibetan languages described above between the expression of surprise regarding an out-of-the-blue event (conveyed by the mirative copula and the absence of the declarative marker), and an event that is contrary to former expectations (conveyed by *hama*).

It is worth noting that the particle *hama* can also indicate polarity focus. The relationship of this function with mirativity will be discussed §6.4.2.

Chipaya is another language having more than one mirative. It has two mirative suffixes, which actually are part of a system of suffixes that express the modality or sentence type of the utterance (e.g. there is also a declarative suffix; see Cerrón-Palomino 2006: 165-67).

The first mirative suffix is *zhkaa,* which expresses intense sorrow or affliction at an out-of-the-blue event.

(108) Chipaya (Uru-Chipaya)
       a. tshii espiritu-zhkaa
          one ghost-MIR
          'A ghost!' (Ibid: 168).

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b. we-t   hwala qwat-chi-*zhkaa*
   my llama disappear-PFCT-MIR
   'My llama is lost!' (Ibid: 169).

A secod mirative suffix, –*la*, specifically conveys that the speaker had specific

expectations regarding a situation, and that the outcome is contrary to these expectations.

(109) a. tii   thami   liso-qala-*la*
          this wind   cool-EVID-MIR
          'This wind is cool!' (I wasn't expecting it)
       b. teqzi-*la*   ch'api-ki
          here-MIR   thorn-TOP
          'Here was the thorn' (and in no other place) (Ibid: 168)

Hence, in Chipaya we also find the mirative distinction between an event that is

surprising per se, and a state of affairs that is contrary to expectations.

Haida is a language that has various mirative constructions. Most of them seem to

express surprise in a general sense, without a specific reference to previous expectations,

as in the following example:

(110) Haida (Haida, Skidegate dialect)
       t'iis   gyaaraang   qaji   sding guud t'axanii   'l@
       rock pole   head two on   MIR   3
       qaagyaa-s
       go.into.water- PRS
       'What do you know, he walked into the water on a two-headed rock (totem)
       pole!' (Swanton 1901: 23 cited in Enrico 2003: 157)

On the other hand, the mirative usage of the interrogative clitic *gwàa* conveys

specifically a sense of deferred realization (Enrico 2003: 160-61):

(111) Haida (Haida)
       a. 7aa-**gwàa**   'la   hlranggulaa-s-dluu-gwàa   'la   7iij-aang-áa-n.
          here-INT   3   work-PRS-when-INT   3   go-FREQ-EVID-PST
          'Here he was working, that's why he kept leaving'

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b. 7aa-**gwàa**   'la   st'i-s-raganaan-gwàa   'la
   here-INT   3   be.sick-PRS-because-INT   3
   tiida-gaang-áa-n   tiida-giiníi.
   lie.down-FREQ-EVID-PST   lie.down-USIT
   'Here she was sick, that's why she was lying down!'

In example (111b), the usitative *giiníi* expresses that the speaker knew that the person was lying down, whereas the interrogative clitic *gwàa* expresses that the speaker has just learned or realized that she was sick.

It is worth noting that *gwàa* is also used in exclamative constructions, as in example (112). We will study the relationship between miratives and exclamatives in §6.4.2:

(112)   na-**gwàa**   tlagu   riid-7ahl.
         house-INT   how   be-must
         'What a house!' (Ibid: 162)

Thus, similarly to other languages described above, Haida marks a distinction between a general sense of surprise and deferred realization.

Jarawara is another language having more than one mirative construction. The first is the non-eyewitness evidential past, which can be used in a mirative sense, as in example (113), for which the following context is given: "One day Okomobi thought he was being given a cup of cachaça (a potent cane whisky). When he raised the cup to his lips he discovered that it was just water" (Dixon 2004: 207).

(113)   Okomobi   faha   hi-fa-**hani**   ama-ke
                   water.F   OBJ-drink-IMM.PST.INFR.F   extent-DECL.F
         'Okomobi (to his surprise) drank water'.

Notice that the fact of drinking water cannot be surprising per se, but can only be considered surprising with respect to the subject's assumptions regarding the event.

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On the other hand, the Jarawara particle *rama* conveys surprise in a more general sense, any unusual event or state of affairs can be described with this particle, as in example (114), for which the following context is given: "Once a Jarawara boy was inspecting my table lamp, run off of bottled gas, and noticed –to his surprise– that one side was cooler than the other" (Ibid: 167).

(114) hi.hiwa   **rama**; haa_S   ita,   hi.hiwa
       RDP.be.hot   MIR   D3   sit   RDP.be.hot
       ni-ne-ke   haaro
       AUXb-CONTF-DECF   D3F
       '(pointing to the cool side) 'this is surprisingly (only) a bit hot'; (pointing
       to the hot side) 'sitting (here), it is a bit hot here'.

In example (115), an ancestor sets fire "to his own belly, as part of a ritual that would provide food for all his people" (2004: 167). Since this is a surprising event, it is coded using *rama.* Notice that this example could also be regarded as a hot news statement.

(115) faja   hiwa_O wati   ka-ne   **rama**   nabati
       then   justM   set.fire.to   APPL-AUXa+M   MIR   belly
       'Then he, unexpectedly, set fire to himself, to his belly'.

It is worth noting that *rama* also forms exclamatives when accompanied by a nominalization, as in the following example:

(116) [ratena_S   hiri   ni]   ehebotee   **rama**
       flashlight .F   illuminate   AUXa+NOM   big   MIR
       'the flashlight's illumination was unusually great'.

To sum up, Jarawara also corroborates the mirative distinction we have found in other languages: the particle *rama* conveys surprise in a general sense, whereas the non-eyewitness past tense has a more specific sense of counter-expectation.

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The final language of our survey is Trio, which also has two mirative constructions. The non-witness evidential construction, *tï*-V-*se,* expresses surprise at a sudden, out-of-the-blue state of affairs, as in the following exchange.

(117) Trio (Cariban)
A: wa-n-ei   pahko
    NEG-3→3.1TR-be.1.PST   1POSS.father
    'my father died'
B: pëë,   **wa-t-ee-se**   papa-hpë
    INTJ   NEG-tï-be- NFNL   2POSS.father-PST
    'oh dear, your father died' (Carlin 2011: 20).

On the other hand, Trio uses a set of clitics (or one clitic with various allomorphs, depending on the analysis) that specifically conveys counter-expectation: *hkarë, hkanarë, hkanara and tahkarë/tahkara.* All of them express "that something is different from what one expected" (Carlin 2004: 451).

(118)   j-injo_**hkarë** n-e:-ja-n
     1POSS-husband_MIR 3→3.1TR-come-PRES-NCRT
     'oh, it's my husband is coming (not the person whom I expected)'.

Hence, in Trio we also can found a contrast between two mirative meanings, one expressing a general sense of surprise and another expressing that the event is contrary to the speaker's expectations.

In summary, all the languages having more than one mirative that we have examined —except for Dhimal, which apparently has only one mirative— establish a distinction between a general sense of surprise and a more specific sense of the state of affairs being contrary to the speaker's expectations or assumptions. Table 9 sums up the distinctions between mirative meanings found in this survey.

The distinction between two mirative meanings examined below raises the question whether languages having only one mirative can be restricted to only one

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mirative meaning. In this respect, the case of Paraguayan Spanish is illustrative. Similarly to the mirative marking in Ecuadorian Spanish mentioned in §2.2, Paraguayan Spanish uses the past perfect form of the copula (*había sido*) with a mirative sense, which specifically conveys deferred realization, as in the following example (Penner 2012: 302): [37]

(119)   **Había sido** se perdió su pasaporte, por eso no pudo viajar a Marín
        '(I just realized/learned that) her passport was lost; for that reason she coud not travel to Marín'. (Lit. 'It had been her passport was lost…').

Language	General sense of surprise	Meaning	Against expectations or former assumptions	Meaning
Galo	*la(a)ka*	New discovery	*ɲi*	Deferred realization
Balti	*le*	New information	*suk*	Deferred realization
Lisu	*bɛ³³tʰɛ²¹*	New discovery	*ɣɛ/lɛ*	Counter-expectation
Aguaruna	Mirative copula / omission of declarative marker	New discovery	*hama*	Counter-expectation
Chipaya	*-zhkaa*	New discovery	*-la*	Counter-expectation
Haida	Other markers	Surprise	*-gwàa*	Deferred realization
Jarawara	*rama*	Unusual, odd	Non-eyewitness marker	Counter-expectation
Trio	tï-V-se	Surprise	*hkarë*	Counter-expectation

Table 9: Mirative meanings in languages having more than one mirative construction.

The distinction between mirative meanings described here mirrors the distinction between thetic functions described in §6.2. As argued therein, one important pragmatic

distinction between existentials and presentatives is that presentatives always entail the addressee's attention and previous unawareness regarding the entity in question, whereas existentials can refer merely to background information. Similarly, miratives conveying that the event is contrary to specific expectations entail a more active attention on the part of the speaker regarding the event in question. On the other hand, miratives with a more general meaning of surprise or novelty merely rely on the speaker's encyclopedic knowledge (i.e. background knowledge).

From the point of view of the subjectification of the forms, miratives expressing that the event is contrary to specific expectations can be regarded as more subjectified than miratives expressing that the event is suprising per se since, in the former, the speaker's expectations regarding the event are integrated to the meaning of the forms (see Traugott 1989).

Figure 16 summarizes on a scale of subjectification the semantic distinctions we have encountered so far.

LESS SUBJECTIFIED   MORE SUBJECTIFIED

| Background information | Novel Information for the addressee | Novel information for the speaker | Information contrary to former assumptions or expectations |

Existence   **Presentation**   **Surprise**   **Counterexpectation**
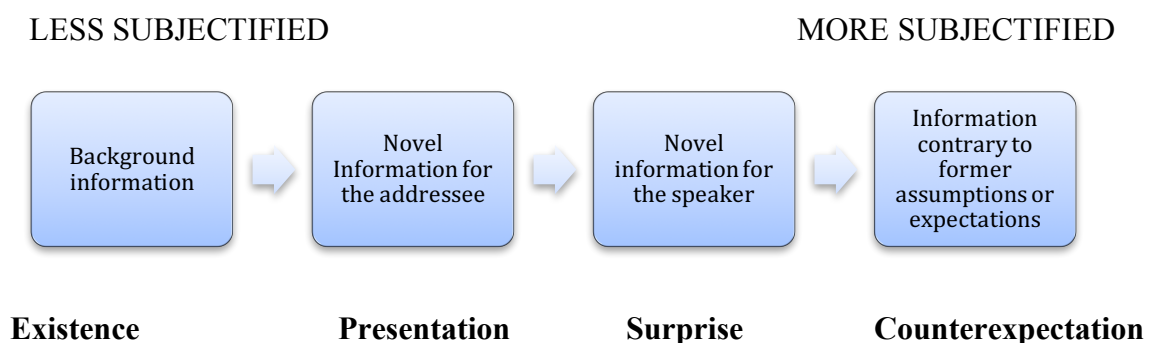
Figure 16: Scale of subjectification from existence to counter-expectation.

To sum up, in thetics as well as in miratives we find more subjectified forms related to the awareness (in the case of thetics) and expectation (in the case of miratives)

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regarding the event in question. This is of course another instance of similarity between these functions, which we will discuss in more detail in §7.2.

In the following section we will finish our survey on miratives and their relationships with thetics with the examination of the behavior of the Lhasa Tibetan copula *ḥdug,* which has recently been at the center of a debate over mirativity as a linguistic category.

6.3.3 A Case Study: the Copula *ḥdug* in Lhasa Tibetan

So far we have found some instances of polysemy involving theticity, mirativity and exclamativity (e.g., the particle *rama* in Jarawara, see above). In this section, we will examine the morpheme *ḥdug* in Lhasa Tibetan. This morpheme is important for the study of mirativity in general and for the study of the relationships between mirativity and theticiy for several reasons. First, in his pioneer article on mirativity, DeLancey (1997) used the copula *ḥdug* as an example of a mirative element. Second, in a recent article, Hill (2012) has contended the validity of mirativity as a linguistic category per se. One of Hill's arguments is precisely based on his own account of the behavior of the morpheme *ḥdug*. Finally, some aspects of the behavior of this morpheme remain controversial. In this subsection, I will argue that this morpheme is better explained as a polysemous item that conveys theticity, mirativity and even exclamativity, and thus it shows the contiguity of these functions in conceptual space.

As I already pointed out, in his pioneer article on mirativity, DeLancey (1997) used the meaning of the copula *ḥdug* in Lhasa Tibetan as an example of mirativity.

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DeLancey contrasts the existential copulas in Lhasa Tibetan, *ḥdug* and *yod,* using the following examples (Ibid: 44):

(120)   Lhasa Tibetan (Sino-Tibetan, Bodic)
  a. nga-r   dngul tog=tsam **yod**
   I-LOC   money some   exist
   'I have some money' (e.g. I brought some with me).
  b. nga-r   dngul tog=tsam **'dug**
   I-LOC   money some   exist
   'I have some money!' (Quite to my surprise).

De Lancey argues that example (120a) "is a statement made from prior knowledge, as for example if the speaker has brought money with him" (Ibid: 44). On the other hand, *ḥdug* in example (120b) "would be used by a speaker who reaches into his pocket and discovers money that he didn't know he was carrying" (Ibid: 44).

DeLancey's proposal of mirativity as a linguistic category has been recently challenged in Hill (2012), who claims that mirativity is not a linguistic category per se, but rather a misinterpretation of the meaning of some evidential morphemes. The morpheme *ḥdug* of Lhasa Tibetan is at the center of this debate since Hill contends that *ḥdug* merely constitutes a sensory evidential. Hill bases his argument on the works of other authors who argue that the original meaning of *ḥdug* was "direct perceptual evidence" (Hill 2012: 398). [38] This is still the meaning of *ḥdug* according to Hill.

It is important to clarify that Lhasa Tibetan has three existential copulas: *yod, yod-pa-red,* and *ḥdug*. Hill labels the meanings of these copulas as 'personal', 'factual' and 'testimonial', respectively, without explaining them any further. The following are

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[38] Nevertheless, Denwood (1999: 122) also describes *ḥdug* as a mirative.

examples of the contrast between these copulas (examples from Goldstein & Nornang 1970: 31; cited in Hill 2012: 393):

(121) a. ṅa-tshor   phyu-pa   gsar-pa   **yod**
        /ˋngantsɔɔ ˊchupə   ˊsaapa   yöʔ/
        1-PL-OBL   clothes   new   COP
        'We have new clothes'.
    b. bod-la   ḥbrog-pa   maṅ-po   **yod-pa-red**
        /ˋphöʔ-lə   ˋtrokpa   'mənku   ˋyəʔreʔ/
        Tibet-OBL   nomad   many   COP
        'There are many nomads in Tibet'.
    c. sman-khan pha-gir   **ḥdug**
        /ˋmänkan   ˋphəkėė   tuʔ/
        hospital   over-there   COP
        'There is a hospital over there'

Notice that in example (121a) *yod* forms a possessive construction, whereas in example (121b) *yod-pa-red* forms an existential construction. Finally, in example (121c) *ḥdug* forms a presentative construction, which is very significant if we acknowledge that miratives can originate from presentatives, and it is very likely that this is the case of *ḥdug*.

As mentioned above, Hill cites sources who argue that the original meaning of *ḥdug* is related to direct perception. However, it could be the case that 'direct perception' has merely been a label used for describing the presentative function in Lhasa Tibetan. The presentative character of *ḥdug* can actually be supported with further examples. The following pair of sentences illustrate the contrast between the existential copula *yod-pa-red* and *ḥdug*:

(122) a. btsoṅ-khaṅ dir   deb   yag-po   **yod-pa-red**
        /'tsonkan   ˋdee   ^teb   ˋyago   yoo-ree/
        shop   this   book   good   COP
        [Speaker A says to speaker B, when neither can see the book before
        entering:] 'This shop has good books.'

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b. ḥdir deb   yag-po **ḥdug**
 /`dee ^teb   `yago duu/
 here book   good   COP
 [Speaker A says after they have entered the shop while looking at the
 book:] 'Here is a good book.' (Yukawa 1966; cited in Hill 2012: 396)

One can infer from these and other examples cited in Hill (2012) that the existential copulas have specialized their functions as follows: *yod* and *yod-pa-red* are locative existentials that in addition have extended their existential meaning to the expression of predicate possession;[39] whereas *ḥdug* is a presentative copula that has extended its meaning to convey mirativity, which is a crosslinguistically attested possibility, as was argued in §6.3.1.

The following pair of examples, which Hill also discusses, illustrate the contrast between *yod* and *ḥdug* (examples from DeLancey 1986: 204-05):

(123)   Bod-la   g.yag **yod**
        Tibet-OBL   yak   COP
        'There are yaks in Tibet.'

(124)   Bod-la   g.yag **'dug**
        Tibet-OBL   yak   COP
        'There are yaks in Tibet.'

DeLancey explains the difference between these copulas as follows:

The distinction represented here is not, as in more typical evidential systems, the source of the speaker's knowledge, but rather ITS RELATIVE NOVELTY OR THE DEGREE TO WHICH IT HAS BEEN INTEGRATED INTO THE SPEAKER'S OVERALL SCHEME OF KNOWLEDGE OF THE WORLD […](123) would be the appropriate form both for a Tibetan, who knows of the existence of yaks in Tibet through daily experience, and for someone like me, who knows the fact only by hearsay, but has known it for years […] [On the other hand,] (124) might be the response of

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[39] The extension from existential to possessive meaning is a well-attested phenomenon across languages; see e.g. Dryer (2007: 246); the same is true for the extension from locative to possessive; see e.g. Clark and Clark (1978); Heine and Kuteva (2002: 101-02). See also Stassen (2009) and references therein.

someone who was fascinated with yaks but knew nothing of where they existed until visiting Tibet and encountering one (Ibid: 205; emphasis added).

Thus, it is very likely that *ḥdug* has undergone a semantic change from being a presentative to function as a mirative. This semantic change shifted the perspective from the addressee's unawareness regarding the entity presented (which is a felicity condition of presentatives, as was argued in §2.1.4) to the surprise of the speaker with respect to a novel configuration. This explains the apparent contradiction between the original meaning of 'direct perception', pointed out by several authors, and the later meaning of 'surprising information', described by DeLancey and others.

Moreover, *ḥdug* has other functions that have been discussed in the literature without reaching a convincing explanation. A puzzling context of the use of *ḥdug* is illustrated in the following examples (contrasting *ḥdug* and *yod* in the same context):

(125) ṅa   na-gi- **ḥdug**
       me   sick-PRS-COP
       'I'm sick' (DeLancey 1986: 207; cited in Hill 2012:403).

(126) ṅa   na-gi-**yod**
       /ˋnga   ˋnʌgəyöö/
       me   sick-PRS- COP
       'I'm chronically sick' (Denwood 1999: 151 cited in Hill 2012: 403).

According to these examples, *ḥdug* is the usual way of reporting a sickness, whereas *yod* is a marked way of reporting it. In fact, *yod* conveys that the sickness in question is not recent but chronic. This use of *ḥdug* for reporting an illness has perplexed several scholars –DeLancey included–, and various explanations have been proposed. For instance, DeLancey (1986: 207) suggested that *ḥdug* in (125) is expressing the lack of control of the subject over the sickness. However, as Hill correctly observes, DeLancey's

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argument does not explain why *ḥdug* is not used in the case of example (126), in which the speaker is still lacking control over the sickness.

In this respect, Denwood (1999: 151) argues that this contrast is produced because, in this specific use, *ḥdug* has a particular sense whereas *yod* has a general sense. Hill criticizes Denwood's proposal for adding an unnecesary category (general vs. specific) in order to explain a very restricted use of *ḥdug* —occurring only in the first person (Hill 2012: 404).

Hill's own explanation is that, in example (126), *yod* expresses how "one has come to know of one's illness in a similar way to how one knows of one's own actions or long term acquaintances" (Ibid: 404). Hill does not explain in detail how he arrived to this conclusion. Moreover, his analysis has the same problem that other authors' proposals: the distinction between both copulas for reporting an illness is not related to any other meanings of *ḥdug* and *yod,* but explained as a sui generis phenomenon.

The contrast between the copulas can be better explained with the existential/presentative distinction. As was argued above, *yod* is an existential copula whereas *ḥdug* is a presentative. The reporting of an illness is of course a thetic function (which we have labeled in this research as 'physical sensation statement'). Thus, the contrast between *ḥdug* and *yod* in this case obeys to the pragmatic distinction that we have already established between a presentative statement (which reports a sudden or novel event) and an existential statement (which reports an existing event that is not necessarily new for the speaker or the addressee).

Therefore, the behavior of *ḥdug* can be explained by considering it as a presentative copula that, as such, is contiguous to mirativity in conceptual space. In this

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respect, it is noteworthy that *ḥdug* can also be used to form exclamatives, as in the following examples:

(127) ja   ḥdi   źim-po   **ḥdug**
       /`cha    `ti   `shimpo       `tuʔ/
       tea   this   delicious   COP
       'This tea is excellent' (Tournadre 1996: 225; cited in Hill 2012: 394).

(128) khyed-raṅ-tsho   dpeḥi   yag-po **ḥdug**
       you-PL   very   good   COP
       'You are extremely / really very good'
       (Chonjore & Abinanti 2003: 131; cited in Hill 2012: 398)

In summary, the copula *ḥdug* comprehensively illustrates how theticity, mirativity and exclamativity are contiguous functions in conceptual space.

6.4   Exclamatives

The previous sections described a region of conceptual space involving thetics and miratives. This region can be subdivided into the following semantic distinctions:

1) Existentials, weather and physical sensation statements: This semantic distinction is functionally related to background information.

2) Hot news statements and presentatives: This semantic distinction conveys information of which the addressee is unaware.

3) 'General surprise' miratives: This semantic distinction involves events that are surprising in a general sense (i.e. with respect to our general knowledge of the world).

4) 'Counter-expectation' miratives: This semantic distinction conveys that the event in question is contrary to the speaker's former assumptions or expectations.

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In this section, we will examine a fifth semantic distinction: exclamativity. This section is organized into the following subsections: §6.4.1 examines structural similarities between thetics and exclamatives, whereas §6.4.2 explores more deeply the relationships between miratives and exclamatives.

6.4.1 Exclamatives and Thetics

Although exclamatives and existentials are relatively distant from each other in conceptual space, it is still possible to find instances of structural similiarity between both functions. One example is constituted by the languages of the Austronesian family, which historically derived exclamatives from existentials (Kaufman 2011). This can be seen in the Tagalog exclamatives in example (129), which use a frozen prefix, *ka-*. This prefix originated in an existential marker of Proto-Malayo-Polynesian that still survives in possessive constructions in Tagalog —see example (130).[40]

(129)   a. kay ganda niya!
   EXCL beauty 3SG.GEN
   'how beautiful she is' (Lit. 'Her beauty!').
  b. pag**ka**-(ganda~)ganda niya!
   EXCL-INTS~beauty   3SG.GEN
   'how beautiful she is'.
  c. nápa**ka**-ganda niya!
   EXCL-beauty   3S.GEN
   'how beautiful she is' (Ibid: 725).

(130) mag-**ka**-pérà
   ACT-EXST-money
   'to have money' (Ibid: 726).

The suffix *ka-* can also be found in predicative constructions in Tagalog. However, predicative constructions, when combined with this suffix, also include the

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[40] See footnote 39.

actor voice marker infix –*um,* which implies "that the subject is a volitional and controlling instigator of the event" (Himmelmann 2005: 365). In other words, prototypical subject-predicate constructions in Tagalog also contain the old existential suffix, but mark the subject as prototypical (having volition and control over the event) by adding the infix -um. On the other hand, this infix does not occur in thetics or exclamatives.

Another structural property of exclamatives is the use of nominalization (Kaufman 2011: 723). Compare the following sentences:

(131)   a. **ma**-ganda   si   Maria.
           ADJ-beauty   NOM   M.
           'Maria is beautiful'.
        b. Kay   ganda **ni**   Maria!
           EXCL   beauty GEN   M.
           'How beautiful Maria is!' (lit. 'Maria's beauty!').

Example (131a) is a standard predicative construction: it uses an adjectival prefix, *ma-*. On the other hand, example (131b) is an exclamative: it uses a genitive marker. In this case, *ganda* functions as a noun and not as an adjective. In the literature on Austronesian languages, this type of structure is regarded as a nominalization: "While the canonical predicates… typically assign nominative case to a thematic argument in the clause [the thematic argument is *ganda* in the case of example (131a)], nominalizations do not assign nominative case but rather can only assign genitive and oblique case to arguments [as it is the case in example (131b)]" (Ibid: 723).

Notice that the exclamatives in examples in (129) also consists of nominalizations (i.e. thematic arguments marked with genitive case). Moreover, the use of nominalizations in Tagalog also shows the proximity between hot news statements and

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exclamatives in conceptual space since hot news statements also use nominalizations, as in example (132) and (133). In the former, the modern existential particle *may* accompanies a nominalization of the verb *to steal* in order to convey hot news. Similarly, in example (133) a nominalization of the verb *to die* conveys hot news.

(132) May   nagnakaw   **ng**=pera   ko
      EXST   ACT.PFCT-steal   GEN=money   my
      'Somebody stole my money' (Kroeger 1993: 48)

(133) anong nangyari?   –   ka- ma- matay lang **ng**   lola.
      what happened?   EXST RED- die   just GEN   grandma
      'What happened?   – Grandma just died' (Sasse 1987: 553).

Conversely, Tagalog, as the rest of the Austronesian family, does not use nominalizations to form topic-comment constructions (Kaufman 2011). Accordingly, the use of nominalizations in hot news statements can be seen as a departure from the canonical sentence (as was argued in §2.1.2, this is often the case of thetic constructions).

As was argued in §6.2, the path from existentials to hot news statements and presentatives starts with a presentational reading of existential constructions. This can be the motivation for the structural similarity between hot news statements and existentials in Tagalog. The path of semantic change in Tagalog might have developed as follows:

(134)   existentials > hot news > exclamatives

The instances of structural similarities between existentials and exclamatives are not restricted to the Austronesian family. Hausa is another example of a language that exhibits a similarity between existentials and exclamatives: the Hausa exclamative construction in example (135) uses the existential predicator *àkwai,* 'there is/there are' along with the preposition *dà,* which in this case is interpreted as the head of a possessive construction (Newman 2000: 179). Because of the genitive marking, the structure of this

exclamative construction in Hausa is similar to the Tagalog exclamatives examined above. Notice that, in example (135), the exclamative meaning is reinforced by the word *ban,* meaning 'really'. We will address this and others intensifiers used in exclamatives in §6.4.2.3.

(135) **àkwai**   tà   dà   ban   màmākì̀
      there is   her   with   real   amazement
      'She is really amazing'.

In 6.1, we argued that existentials, weather and physical sensation statements are related to the more general thetic function of background description. Somali shows an interesting connection between background descriptions and exclamatives. However, in order to explain it, it is necessary to briefly describe the entire information-structure system.

There are three distinct information-packaging configurations in Somali (Tosco 2002: 44):

1. Topical (the item that functions as topic is not marked by focus and it is located outside the verbal complex).

2. Focus-marked (an element is marked with focus particles or appears in a cleft construction).

3. Detopicalized, backgrounded (the item appears inside the verbal complex, that is, incorporated to the verb).

Topic-comment constructions use the first configuration, in which the topic appears outside the verbal complex without focus marking. On the other hand, hot news statements use the second configuration, in which the subject is marked with focus particles (Saeed 1993: 231; Tosco 2002). Finally, backgrounded, detopicalized elements

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use noun incorporation (Tosco 2002: 44).[41] This is illustrated in example (136), which appears at the end of a tale explaining how the crocodile lost its tongue. According to Tosco, the last sentence could also be translated 'the crocodile is still tongueless' —the name *carrab* is incorporated to the verb. In this case, incorporation conveys that "the crocodile's tongue is no longer a topic; rather, the crocodile's fate and its current situation is" (Ibid: 44). Functionally, this sentence is an existential referring to an habitual situation (see Sasse 2006: 299).

(136) dawo   webi   kama ag   dhowaato,   yaxaasna
       Jackal.SBJ   river to=not near approach.NEG.3M crocodile. SBJ=and
       wuu   weli   **carrab**   **la'yahay**
       still   WAA=he tongue   miss.PRS.3M
       '…the jackal still does not go near a river, while the crocodile still does not have his tongue'

Exclamative constructions in Somali have a similar structure to that of example (136). Exclamatives use the quantifying adjective *badán* 'much, many'. The typical use of this adjective is illustrated in example (137a), which has the structure of a topic-comment construction —the noun that *badan* modifies appears separated from the verb complex, in a topic-comment configuration. In contrast, in examples (137b-c) the nouns *xòog* and *qurúx* appear within the verbal complex, that is, in a sort of incorporation to the adjective.

(137) a. Dád-ku   **wày**   **badan**-yihiin.
         People-the   DECL.they   many-are
         'The people are many'

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[41] It is important to note that this is not the only function of noun incorporation in Somali. For instance, noun incorporation is also a common device for coining new words (see Tosco 2002).

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b. Nín-ku   wuu   xòog   **badan**-yahay
Man-the   DECL.he   strength   much-is
'The man is very strong'

c. Gabádh-dhu way   qurúx   badan-tahay.
Girl-the   DECL.she   beauty   much-is
'The girl is very beautiful.'

Saeed explains the above examples as instances of noun incorporation:

The accentual patterns do not identify a single word, a compound adjective like
*xoogbadán 'great-in-strength' or *quruxbadán* 'great in beauty''. Accentually, the
nouns remain independent, showing the same tonal pattern as when, for example,
heading a noun phrase, e.g. *qurúx badán* 'beauty which is much, great beauty'
[…] What we seem to have here is a process somewhere between straightforward
compounding and normal phrasal syntax, where this adjective may incorporate
nouns to form a phrase. Moreover, the process is fairly productive: any
semantically plausible nominal may participate (Saeed 1999: 155).

Hence, in Somali, background descriptions and exclamatives use noun

incorporation.

Thus far we have noted that it is possible to find connections between existentials,

background descriptions in general and even hot news statements and exclamative

constructions. Additionally, we can find examples of presentatives used with an

exclamative sense. For example, in Supyire, a verbless exclamative is formed with the

same structure of a presentative (Carlson 1994: 196).

(138)   Supyire (Niger-Congo, Gur)
     Pyá   wá   wé!
     Child   INDF   it.is
     'What a (troublesome) child!' (lit. Here is a child!)

In Udihe, a presentative particle *m'a,* 'here it is', can also have an exclamative

sense (Nikolaeva & Tolskaya 2001: 468).

(139)   Udihe (Altaic, Tungusic)
     a. **M'a**   Puza!
        Here   Puza (name of the fire spirit)
        'Here it is, Puza!'' (an address to the fire spirit when feeding it).

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b. **M'a**   paki   a:nta   bi:-ni   bube-nu.
Here   skillful   woman   be-3SG   EVID-FOC
'What a skillful woman she turns out to be!'

Bininj Gun-Wok uses noun incorporation in presentational constructions, hot news statements, and exclamatives. Example (140a) is a presentative construction that uses a stance verb. On the other hand, example (140b) is an exclamative in which the noun *berd* is incorporated to the adjective *kimuk*.

(140)   Bininj Gun-Wok (Gunwinyguan, Gunwinygic)
         a. Muddikka   Ø-bolh-yo-y
            vehicle   3-track-lie-PST
           'There was a vehicle track'(Evans 2003: 478).
         b. Yi-berd-kimuk!
           2-prick-big
           'You've got a big prick!' (Joking register) (Ibid: 354).

Alterations of the canonical word order can also be similar for thetics and exclamatives. In Russian, hot news statements use SV inversion (Maslova 1995). Similarly, there is one exclamative construction in Russian that inverts the canonical order of the adjective and the noun, putting the adjective in the first slot of the sentence –-which is the canonical place for the noun:

(141)   Russian (Indo-European, Slavic)
         udátʃaja   bʲɨlá   oxóta!
         Successful   was   hunt
         'That was a successful hunt!' (Wade & Gillespie 2011: 531)

Arvanitika also uses SV inversion to convey hot news statements. The canonical order is SV, but example (142a), a hot news statement, inverts this order. Exclamative constructions also change the canonical order of the subject, and in addition, the copula is omitted, as in example (142b). Thus, exclamatives use a more marked structure.

(142) Arvanitika (Indo-European, Albanian)
  a. u-príʃ   mehaɲía
     broke   machine
     'The maCHIne broke' (Sasse 1991: 423).
  b. ʃűmə   e-máð̃e   ʃtəpía
     very much   big   house
     'What a big house!' (Ibid: 372)

To sum up, exclamatives and thetics clearly share formal similarities. We have found similarities between exclamatives and the following thetic subtypes: presentatives, hot news statements, existentials, and background descriptions. I suggest that the motivation for this structural resemblance originates in the unawareness entailed by the felicity conditions of presentatives and hot news statements (see §2.1.4). By a process of subjectification, this unawareness becomes unexpectedness and, at a more advanced stage, surprise at a noteworthy characteristic of the subject. In other words, the sense of unawareness expressed by thetic constructions develops into a sense of novelty and surprise in exclamative constructions. This underlying subjectification path is represented in Figure 17.

Moreover, the structural similarities between thetics and exclamatives can be regarded as instances of iconicity: whereas prototypical topic-comment constructions convey assimilated knowledge, deviations from this configuration are likely due to the unassimilated, surprising character of exclamative sentences —recall that exclamatives tend to be more marked structures.

Figure 17: Path of semantic change: from unawareness to astonishment.

6.4.2 Exclamatives and Miratives

As was observed in §2.3, several authors consider exclamatives and miratives as closely related functions, and some scholars do not even distinguish one function from the other. On the other hand, other authors have compared one function to the other and tried to explain the differences. In this section, we will follow a rather different strategy: in addition to comparing miratives to exclamatives, we will also compare these functions to other functions to which they are secondarily related, such as interrogatives and polarity focus. This section is organized as follows: §6.4.2.1 discusses some examples of structural similarity between miratives and exclamatives; §6.4.2.2 studies the reationships between exclamatives, miratives and interrogatives; finally, §6.4.2.3 addresses the connection between miratives, exclamatives and polarity focus.

6.4.2.1 Structural Similarities between Miratives and Exclamatives

It is important to note that, when exclamatives and miratives use similar structural features, exclamatives tend to be the more marked construction. One example of this is the particle *rama* in Jarawara (already discussed in §6.3.2). Example (143) is uttered by a Jarawara speaker in seeing "a photograph of sparsely timbered land, which showed a marked contrast to the rainforest environment of the Jarawara" (Dixon 2004: 204). In this

case, *rama* expresses the speaker's judgment of the situation as strange or odd (i.e. a mirative construction expressing surprise in a general sense). On the other hand, example (144) —already cited as example (116), and repeated here for convenience— is an exclamative in which, in addition to the particle *rama*, a nominalization appears, being thus a more marked construction.

(143)   awa$_S$ ta.tama   **rama**   na   awine-ke
        tree(f)   RDP.be.many   MIR   AUXc   seems+F-DECF
        'there appear to be surprisingly few trees'.

(144)   [ratena$_S$ hiri   **ni**]   ehebotee   **rama**
        flashlight .F   illuminate   **AUXa+NOM**   big   MIR
        'the flashlight's illumination was unusually great' (Ibid: 167).

The use of similar constructions to convey mirativity and exclamativity indicates a semantic shift from surprise regarding an unexpected event to an evaluation of a surprising scalar extent.

Another example of the similarities between miratives and exclamatives can be found in Cavineña. In the following sentences the mirative-exclamative clitic *=taa* appears. In example (145), the speaker expresses is describing his surprise at the crying of his dogs (because he fell into a ditch). In this case, the clitic *=taa* is attached to the verb. On the other hand, in example (146), the speaker "is invited to drink a refreshment he had never tried before. He finds it very tasty" (Guillaume 2008: 65). In this case, the construction is verbless.

(145)   Cavineña (Tacanan)
        Enapa-wa   *=taa*   *=tuna-ra$_{AG}$*   *=i-ke$_{OBJ.}$*
        cry.for-PFCT   =EMPH   =3PL-ERG   =1SG-F
        'They (my dogs) cried for me!'

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(146) *Ji-da*_{PRED}*=taa*   *[jee*_{PRED}*=ke*   *refresco]*_{SBJ}*!*
     Good-ADJR=EMPH   here=LIG   soft.drink
     'This soft drink is indeed very good!'

These examples illustrate the formal similarities between miratives and exclamatives, as well as the tendency of exclamatives to be more marked than miratives (i.e. more deviated from prototypical topic-comment constructions).

6.4.2.2 Miratives, Exclamatives and Interrogatives

It is a well-known fact that exclamatives resemble interrogatives in many languages. Moreover, as was noted in §2.3, several authors have considered this resemblance as the most remarkable feature of exclamatives, and have tried to explain exclamatives on the light of this resemblance. The interrogative-like exclamative is widely considered as the prototypical exclamative, in spite of the structural diversity of exclamatives in the world's languages.

The traditional approach of comparing exclamatives to questions has produced a diversity of explanations, which shows that the relationship between exclamatives and interrogatives is not intuitively clear, but rather puzzling.

With respect to the traditional approaches to the study of exclamatives, we have an advantageus point of view: miratives also can resemble interrogatives. This resemblance, which has not been noticed so far in the literature on miratives, can shed light on the relationship of exclamatives with interrogatives —since miratives and exclamatives are closely related functions.

In our language sample, we can find two types of mirative configurations related to questions:

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1) An interrogative morpheme also conveys mirativity (i.e. it is a polysemous element).

2) A mirative morpheme is used in questions.

We will start with the first case, a polysemous element that expresses mirativity and interrogativity. Emerillon provides an illustrative example. This language has an interrogative particle, *sipo,* which can also convey mirativity. The interrogative use of the particle is illustrated in example (147).

(147)   Emerillon (Tupian, Wayampí)
de-le-iba-we-**sipo**   ele-menõŋ?
2SG-CONN-animal-so-INT   2SG-lay.with.somebody-CONT
'Do you REALLY lay down with the beast?' (Rose 2003: 414)

Notice that *sipo* conveys a specific type of question: a confirmation or echo question: "La particule –*sipo,* quant à elle, n'est pas purement interrogative, mais aussi exclamative. Elle ne demande en réalité pas vraiment de réponse: c'est une question rhétorique qui sert d'exclamation exprimant les émotions du locuteur (la surprise, le dégoût…)" (Ibid: 414) [Regarding the particle –*sipo*, it is not purely interrogative, but also exclamative. It does not really needs a response: it is a rhetorical question that expresses the speaker's emotions (surprise, disgust…)].

On the other hand, example (148) shows the mirative use of the particle: a girl identifies the person who has been visiting her every night, and reacts with surprise at discovering that the person is her own brother.

(148)   ede-a-te-**sipo**   naonan   ele-zol?
PRN2SG -to-FOC-INT   non.stop   2SG-come
'So it is YOU who has been coming all this time!'

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Another example of the relationship between miratives and questions is the mirative particle *ta'dy* in Kwaza, which can be used in a confirmation question as the following:

(149) Kwaza (Kwaza)
　　　'ku　　jerexwa-**ta'dy**-tja
　　　my!　　jaguar-MIR-SBR
　　　'my!, that's a jaguar, isn't it?' (van der Voort 2004: 602)

In its mirative sense, this particle "expresses indignation, surprise or satisfaction with the discovery of the identity of the referent of the noun, or with the explanatory quality of the event denoted by the verb" (Ibid: 554), as in the following example:

(150) cay-**ta'dy**
　　　papaya-EXCL
　　　'ah, it is a wild papaya!'

Reportedly, these interrogative elements in Émerillon and Kwaza do not convey exclamativity. In both languages, the mirative use is apparently related to confirmation or echo questions —also referred in the literature as 'check questions': "a subtype of question which requests the interlocutor to confirm some information; the information may have been mentioned explicitly in the preceding dialogue… or it may have been inferred from what the interlocutor has said" (Jurafsky 2004: 593).

Echo questions "can be used not only when the echoer did not hear properly or understand what was said, but also WHEN HE WANTS TO EXPRESS HIS INCREDULITY AT WHAT HE HEARD" (Noh 1995: 108; emphasis added). For example, the echo question *John is tall?* can either ask for a confirmation of the statement or express incredulity with respect to the correspondent affirmation.

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One important distinction between an ordinary interrogative and an echo question is that "echo questions metarepresent attributed representations, and require pragmatic enrichment in order to be properly understood" (Noh 2000: 171). That is, in uttering an echo question, the speaker attributes the corresponding belief to the addressee.

We will now turn our attention to the second mirative-interrogative configuration: that of a mirative element appearing in a question.

When a mirative element is used in a question, it is often the case that it causes the interrogation to have the sense of an echo question. For example, in Semelai, the irrealis clitic has a mirative function. But it also can appear in questions, as in example (151), in which the irrealis conveys mirativity: "a man encounters a group of monkeys who are fearful of him. This vexes him, for he can see no reason for their fear. In the following clause, containing an affective state verb, he asks them why they fear him" (Kruspe 2004: 290).

(151)   Semelai (Aslian, Austro-Asiatic)
mande ma-bt^{h}ɔŋ-iʔ   yɛʔ daʔ daʔ   hal   ma-bt^{h}ɔŋ-iʔ   yɛ
why   IRR-be.afraid-APPL   1 NEG EXST   reason IRR-be.afraid-TR   1
Why are you afraid of me? There's no reason (to) be afraid of me.

Notice that this is not an information question but rather a rhetorical question —or an echo question in the sense that the focus is on the representation of the addresees's state of mind.

Interestingly, the interrogative element *mande* in Semelai can also form exclamatives, as in example (152). However, in such cases, the irrealis is absent, thus suggesting that, in this language, the relationship between miratives and interrogatives is different from that between exclamatives and interrogatives.

(152) Ki-jŋɔk   **mande**   mɔt   mirah
       3-look.at   what.sort   eye   be.red
       'He observed what red eyes she had' (Ibid: 183).

Moreover, notice that, in example (152), *mande* is specifically translated as "what sort*"*, that is, in this case it is considered as conveying a question regarding the category of the item in question. We will return to this point.

In Sochiapan Chinantec if the mirative marker (*máʔ^L*) is used in a question, it conveys the sense of an echo question: "the implication is that the speaker was certain the addressee was unable to speak Spanish and is astonished to find the opposite to be true" (Foris 2000: 373).

(153)   Sochiapan Chinantec (Oto-Manguean, Chinantecan)
        [ʔí^H má^M tí^M]   **máʔ^L**   nú^M hú^{H}miiʔ^{MH}
        INT   PFCT   be.able.STI.2   EXCL   youˆSG   Spanish
        'Are you REALLY able to speak Spanish?'

The marker can also appear by itself in a declarative sentence to convey a more typical mirative, as in example (154). The scope of the marker in this case is on the time when the sibling will return (which is seen as surprising or unexpected) and not on the action of returning:

(154) hǎuʔ^L rẽʔ^M nú^M [la^L tï^L mii^M kǎu^M]
       return.home.1SBJˆ.FUT.3SG   relative.2   you.SG even   at   year   next
       máʔ^L
       EXCL
       'Not until next year will your brother/sister return' (Ibid: 372).

Interestingly, *máʔ^L* also conveys two other functions: polarity focus and exclamativity. In example (155), the scope of the particle is in the previous negation and

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for this reason, it strengthens the assertive force of the utterance (i.e. it conveys polarity focus or verum focus).[42] On the other hand, example (156) is an exclamative.

(155) [tiá^M lí^HL] **má?^L** có^LM cú^M né^LM
       not   be.possible.INTR.FUT EXCL go.nonhome.INTR.FUT.3SG 3 today
       'It is not possible that s/he go today!'

(156) [?e^L] **ma^L** ka^L-sõ^M ?ma?^MH ká^Mfe^MH
       EXCL   EXCL   PST-lowerˆINTR   valueˆ3   coffee
       'Wow, the value of coffee has (sure) fallen!' (Ibid: 373).

By the examples examined above, we can conclude that echo questions and miratives are closely related in conceptual space. On the other hand, the examples surveyed do not suggest that exclamatives are directly related to echo questions. In this respect, the case of Semelai was illustrative. As was noted above, in example (152) the question word was translated as "what sort of", namely, an identification of the item in question. In fact, in an often overlooked study, Bolinger (1972b) addressed precisely the issue of the relationship between exclamatives and questions and proposed that question words develop into intensifiers by a process of semantic shifting from identification to intensification. For instance, in example (157b), "*what* anticipates a negative answer, in terms of there not being any such use, and comes to signify quantity" (Ibid: 91). For this reason, example (157a) is ill-formed:

(157) a. *What use do you have *for* this? Name *it*!
       b. What use do you have for this? Come on, now, *how much*?

Bolinger formulates this semantic shift as going from "identification by some noteworthy characteristic to intensification of that characteristic" (Ibid: 91).

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[42] We will examine the relationship between polarity focus, miratives and exclamatives in §6.4.2.3.

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Crosslinguistic evidence supports Bolinger's thesis. The following example, from Ket, illustrates the shift from identification to intensification. In this example, the interrogative words *ásès,* which means 'what kind of' —hence, formerly used to identify a referent—, has an exclamative sense:

(158)   Ket (Yeniseian)
ásès   sēs   kūk
what   river   Yenisei
'What a river the Yenisei is!' (Vajda 2004: 32)

The process from identification to intensification can also be illustrated by the exclamative construction in Biblical Greek:

(159)   Ἴδετε   **ποταπὴν**   ἀγάπην   δέδωκεν   ἡμῖν   ὁ   πατήρ,
See   **what sort**   love   has given   to us   the   father
ἵνα   τέκνα   θεοῦ   κληθῶμεν
that   children   of God   we might be called
"See what love the Father has given us, that we should be called children of God"
(1 John 3:1a)

Moreover, the shift from identification to intensification is not only restricted to interrogative words, but can also be found in other types of exclamatives. For example, in Basque, an isolated relative construction with an identification sense is used to express exclamativity:

(160)   A   zan atsegiiia   nik   euki   nebana   igandean!
that   was pleasure   1.ERG   got   AUX.COMP.DET   Sunday.LOC
'What a pleasure I got on Sunday! (lit. 'That was a pleasure, which I got on Sunday!')' (Etxeparre 2003: 567)

A related example can be found in Mapuche. The reportative particle *-rke* is polysemous. It can identify a subject by inference (i.e. as an inferential marker), and it also conveys mirativity and exclamativity. Thus, example (161) has all three possible readings: as a mirative, as an exclamative and as an inferential, respectively.

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(161)   Mapuche (Araucanian)
        trewa-rke!
        Dog-REP
        'a dog!', 'what a big dog!' / 'it must have been a dog' (e.g. when the
        speaker sees that all the meat has been eaten) (Smeets 2008: 110)

Notice that all interpretations are related to the identification of the item. However, this identification also has an intensification value in the case of the exclamative reading. The dog in question is not merely identified as such but also as a rather extraordinary exemplar of its category.

In summary, the crosslinguistic evidence suggests that both miratives and exclamatives are related to interrogatives, but in distinct ways: miratives are related to echo questions, whereas exclamatives are related to questions that identify the item or, more specifically, that ask for the category to which the item pertains. We will study this aspect in more detail in the next subsection.

6.4.2.3 Miratives, Exclamatives and Polarity Focus

Another important function related to miratives and exclamatives is polarity focus (i.e. verum focus). We already have presented some examples of polysemous elements expressing polarity focus and mirativity in 6.3. In this section, we will study in more detail the relationship between polarity focus, mirativity and exclamativity.

The shift from polarity focus to intensification is actually a well-attested phenomenon in the world languages (Heine & Kuteva 2002: 302). Oftentimes, an element that can be translated as 'true' or 'really' also forms exclamatives. This is also the case with miratives. The semantic shift from polarity focus to intensification was also observed by Bolinger in his already cited study on degree words (1972b). Specifically,

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Bolinger analyzes the behavior of English *really*. Bolinger explains the semantic shift in *really* from a polarity focus marker to an intensifier by giving the following example: We know a person who only drives old cars. Suddenly, we are told that this person is now driving a new car. We cannot believe this statement, and in seeing that this person is indeed driving a new car, we utter example (162) with a marked accent on 'new'.

(162)   Why, it's really NEW, just as you say.

Bolinger explains: "In this context, an unaccented *really* does not intensify *new* but only signals the truth of the statement. On the other hand, if *really* were accented as well as *new,* it would be hard not to conclude that the car is not only new but NEW TO AN UNEXPECTED DEGREE" (Ibid: 103; emphasis added). The following is the example suggested by Bolinger:

(163)   Why, it's REALLY NEW, just as you say.

Examples of the relationship between polarity focus, mirativity and exclamativity are not scarce in our data. Moreover, it is even possible to find languages in which polarity focus is related not only to mirativity but also to theticity. This is the case in Sheko. This language uses subject pronouns encliticized to the verb stem (Hellenthal 2010: 433-34). In the canonical syntax, these pronouns precede the verb – as in example (164). However, if these pronouns follow the verb instead, they can express polarity focus —as in example (165)— as well as theticity: example (166) is a presentative construction and example (167) is a hot news statement. Finally, example (168) is a mirative.

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(164) Sheko (Afro-Asiatic, North Omotic)
    ń=t'ùùs-k-ə
    1PL=know-RL-STI
    'we know it'

(165) t'ùùs=**ń**-k-ə
     know=1PL-RL-STI
    'we KNOW it', 'we do know it'

(166) sg̱āād   kì=**á-k**-ə
    pond   EXST =3MSG-RL-STI
    'THERE is a pond' (Context: introduction of *sg̱āād* in the discourse. *sg̱āād* is a pond
    with water which reportedly contains minerals stimulating milk production of
    cattle.)

(167) gébèn   bây   dàdù   nyààs=**í-k**
    Geben   female   child   give.birth=3FSG- RL
    'Geben has given birth to a daughter!'

(168) bàʒ=á-kn
    work=3MSBJ-known'
    It WORKS.' (Context: machine works properly after it is fixed.)

Thus, Sheko illustrates the relationships between polarity focus, theticity and mirativity in conceptual space. Notice that the thetic subtypes conveyed by the alteration of the canonical order of the subject pronouns are presentatives and hot news statements —that is, those subtypes that are closer in conceptual space to miratives.

The functional motivation for the proximity between polarity focus and mirativity in conceptual space can be found in the contexts in which polarity focus is used. "An emphatic assertion that something is truly the case is only called for in problematic contexts, i.e. in those cases in which the focused expression is a remarkable and thus highly unlikely value for a propositional schema" (König 1991: 138). Moreoever, truth-value focus necessarily involves new information since it assesses "the extent to which an existing assumption is confirmed, strengthened or justified by a new item or

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information." (Ibid: 178). Miratives refer to surprising or even hard-to-believe events. Events of this kind are commonly communicated with polarity focus in order to emphasize its reliability. Notice also that the shift from polarity focus to mirativity represents a more advanced stage of subjectification of the forms.

In some languages, the same construction is used to convey polarity focus, mirativity and exclamativity. For instance, in Kuuk Thaayorre, the particle *minc* —a polarity focus marker meaning 'true' and 'really' (Gaby 2006: 581-82)— conveys mirativity and exclamativity. In its mirative sense, *minc* conveys that the state of affairs is contrary to specific, active expectations. This is the case of example (169a), in which *minc* is used to express that the animal that came out from the hole was not the expected one. Similarly, in example (169b), "the existence of an expectation running counter to actual events is… signaled by the presence of *minc*" (Ibid: 582). Thus, the use of *minc* in these examples implies that some active expectation has not been fulfilled.

(169)   Kuuk Thaayorre (Northern Pama-Nyungan)
    a. nhul **minc** thatr *waath*-m   *ngul* minh kaal   ripi-rr
       3sg(ERG) really frog(ACC) search-PAST.IMPF then meat rat(NOM) exit-PAST.PFCT
       'he was looking for the frog but a rat came out [of the hole]'
    b. ngul **minc** nhaawr   jet   kun-thomp=kaak   yancm
       then really see: PAST.PFCT jet   bum-smoke=PROP   go-PAST.IMPF
       'then [to our surprise] we saw a jet fly by with smoke coming out behind it'

In addition, *minc* also appears in exclamative constructions, as in the following example:

(170)   punth   inh   waarr ngamal **minc**!
        arm(NOM)   DEM   very   large   really
        'this [crocodile's] arms were really very large!' (Ibid: 613)

As was noted in §6.3.2, Haida uses the same morpheme for expressing polarity focus, mirativity and exclamativity: the interrogative particle *gwaa*. In example (171),

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gwaa "serves to emphasize or stress truth value" (Enrico 2003: 152) —that is, it serves as a polarity focus marker. Finally, in examples (172) and (173), *gwaa* conveys mirativity and exclamativity, respectively. Notice that the literal translation of the last example shows that the exclamative sense originated in a polarity focus reading.

(171)   A: 7aayaad   gam   tada-.ang-gang.   B: tada-ang-**gwaa**!
            today   NEG   be.cold-NEG-PRS   be.cold-PRS-INT
        A: 'It isn't cold today'. B: 'On the contrary, it's cold!'

(172)   dii   daaraa7w-aay-ra-**gw@**   0   71jaa-gán
        my   pocket-DEF-in-INT   3p   be-EVID-PST
        'Here it was in my pocket all the time!' (Ibid: 161)

(173)   rayaaw-**gwàa** tlagu   'laa   tlajaaw-7ahl.
        smoke-INT   how   be.nice   how-must
        'What nice smoke!' (lit. 'I wonder if smoke is REALLY so nice') (Ibid: 162)

The examples cited above point to the path of subjectification represented in Figure 18.
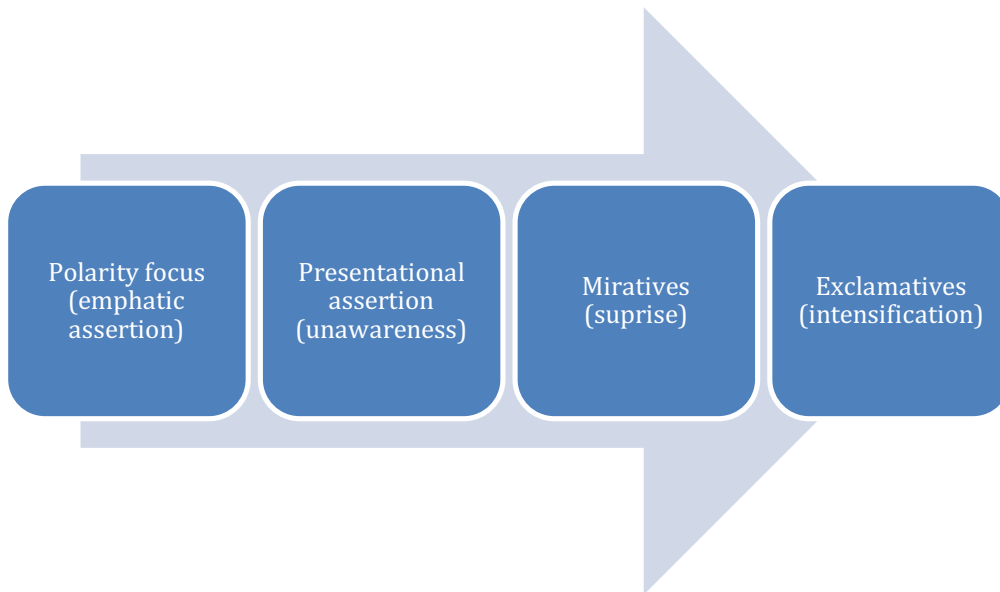
Figure 18: Scale of subjectification from polarity focus to exclamativity.

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Notice that the process described in Figure 18 is consistent with Traugott's tendency III of semantic change:

(174) Meanings tend to become increasingly based in the speaker's subjective belief state/attitude towards the proposition (Traugott 1989: 35).

Moreover, the crosslinguistic evidence suggests that polarity focus is also related to the function that Bolinger labeled as 'identification', namely, the identification of the category of an item referred in the discourse (see §6.4.2.2). In this respect, Gooniyandi offers an interesting example. A Gooniyandi clitic, *nyali,* usually translated as 'really' (i.e. as a polarity focus marker), and it also can function as a mirative, conveying "that it is surprising that the event or process occurred at all, at least with the present actor" (McGregor 1990: 467):

(175) Gooniyandi (Australian, Bunuban)
thadda -*ngga* looddoob **-*nyali* -** woonaddi
dog ERG chase REALLY he:extends:to:them
'The dog really chases the bullocks (which is surprising).'

The clitic –*nyali* also forms exclamative sentences. McGregor explains the usage that appears in (176) as "a type of intensification, whereby a property is asserted as being held to a significant extent" (Ibid: 466).

(176) minyjidda **-nyali** waddamba bijngarni
true REALLY flood it:emerged
'A truly big flood came up.'

Notice however that in example (176) *nyali* is not expressing polarity focus. Rather, *minyjidda* and *nyali* together function as intensifiers that convey the exclamative interpretation. It is worth noting how this intensification is performed: the literal meaning is that the event is an exceptional member of its category (i.e. is a 'truly real' flood). The intensifying effect is a consequence of the general knowledge with respect to the category

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in question (i.e. a flood must usually be big to be considered as such). This strategy of forming exclamative intensifiers from markers of category membership is crosslinguistically common. In what follows, I will present more examples of this strategy.

Kwomtari has a particle, *feti*, which expresses that an object is a member of certain category. In example (177a), *feti* is used to express that the character in the narrative considered the entity in question as a pig. On the other hand, in example (177b), the same particle is used as an exclamative device. Notice that in this case, the particle roughly has the same meaning: the child in question is an exceptional example of the category 'bad child'. However, in this case *feti* is not only a marker of membership to a category but also an intensifier.

(177) Kwomtari (Kwomtari-Baibai, Kwomtari)
    a. Nanu-*ko*   fori   **feti**   pai   ne-lee.
       3.PRN-FOC. pig   PTCL   DUB   say-3SG.RL
       'He thought it was a real pig (It wasn't – the beast was half pig, half man)'
       (Spencer 2008: 140).
    b. Nebulu *ari* **feti**   *le-lu-aga!*
       bad child   PTCL   do-23SG.RL-EXCL
       'You are a very bad child!' (Ibid: 148)

A similar example is found in Khwe. The adjective *tcɛ́m̀* –or its variant *tcɛ́m̀-xa*–, meaning 'real', expresses that the subject is a member of the category, as in example (178); but the adjective can also be used to convey exclamativity, as in example (179) (Kilian-Hatz 2008: 214).

(178) Khwe (Central Khoisan)
    Tcá   **tcɛ́m̀(-xa)**   Khwé rè?
    2SG.M real-GER   Khwe INT
    'Are you really (lit. a real) a Khwe?'

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(179) **Tcέm̀** ngú   à.
       Real house COP
       'That's a real [i.e. well-built] house'.

Example (179) is similar to example (176) in that the exclamative sense is supported by the general knowledge of the concept: *tcέm̀* is not merely identifying the entity as a house but also asserting that it is a surprisingly good exemplar of a house — because well-built houses are better exemplars of the category.

To sum up, in some languages polarity focus markers can also establish category membership, which in turn can also express exclamativity. In fact, it is not surprising that polarity focus markers and markers of category membership are related since both are usually classified under the broader category of 'linguistic hedges' (see e.g. Zadeh 1972; Lakoff 1973). Linguistic hedges either represent the degree of membership of an item to a category or the 'degree of truth' of a proposition —of course, in the context of nontraditional logic. Ultimately, linguistic hedges referring to the degree of membership of an item to a category can also be regarded as expressing the 'degree of truth' of a proposition (i.e. the extent to which is true that the item X pertains to the category Y).[43]

Traditional logic cannot handle degrees of truth because it only assigns binary values to propositions (either true or false); on the other hand, one system of logic that can account for linguistic hedges is fuzzy logic, a system of logic designed to manipulate fuzzy sets (i.e. sets with unclear delimitations).[44]

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[43] See Lakoff (1973).
[44] The literature on fuzzy logic and fuzzy sets is very extensive. Zadeh (1965) was a pioneer article. A modern manual on fuzzy logic is Ross (2010).

Fuzzy sets were first proposed in Zadeh (1965) as an alternative to the classical set theory. In classical set theory, membership to a set is discrete: an item either pertains or not pertains to a set. In contrast to this view, the boundaries of fuzzy sets are not strictly delimited. Hence, membership to a fuzzy set is a matter of degree. Instead of being described as a binary value, a membership value between [0, 1] is assigned to the item: 0 represents a null degree of membership and 1 represents the highest degree of membership, whereas decimal values may represent intermediate degrees of membership (e.g. .1, .2, .3, and so forth).

According to the linguistic facts described above, exclamatives apparently involve a fuzzy categorization of some sort. In this respect, it is worth noting that exclamatives cannot operate over classical sets (i.e. sets that are non-fuzzy). This fact sheds new light over Michaelis' observation (already cited in §2.3) about the impossibility of uttering *How prime is this number!* as an exclamative: the sentence is infelicitous as an exclamative because being a prime number is not a fuzzy category.

The idea of exclamatives being based on linguistic hedges can be supported by another piece of evidence: In some languages, exclamatives are actually part of a more complex system of linguistic hedges. For example, Puinave has a group of clitics that indicate the scalar extent of a property or the degree of membership to a category (Girón Higuita 2008: 305-07). A low membership value is conveyed by the morpheme *–jeu.* It can convey, for instance, that a person is not angry but merely in a bad mood:

(180)   Puinave (Puinave)
        i-nr̃m-jeu
        AT-anger-MOD
        In a bad mood.

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The morpheme –*pek,* on the other hand, establishes a high degree of membership to a category. In the following example, –*pek* expresses the high degree of membership of the person to the category 'woman', namely, an adult woman.

(181)   dén-pek
        woman-INTS
        Adult woman.

The superlative –*patjeî* expresses a comparative relationship, as in the following example:

(182)   ó-da   i-sɤ́m-patjeî
        PRN-ASS   AT-small-SUP
        He/she is the smallest one.

In this system of intensifiers in Puinave, we can also find the morpheme –*nomjei,* which expresses an extremely high membership value, which we can regard as an exclamative.

(183)   ja-nomjei-kɤ̂t   ma-yúyot
        3SG-INTS3-red   2SG-dress
        Your dress is very red.

Another example of a language that uses a system of hedges to form exclamatives is Lao, which has two different types of reduplication: Type A reduplication, illustrated in example (184b), has a superlative sense, whereas type B reduplication, illustrated in example (185), has an exclamative sense.

(184)   Lao (Tai-Kadai, Kam-Tai)
        a. khon2   suung3
           person   tall
           'the tall person'
        b. khon2   sungø-suung3
           person   RDP.A-tall
           'the tallest person' (Enfield 2007: 253).

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(185) phuø-nii4   **ngaam2**-ngaam2
      M.HUM-DEM   RDP.B-beautiful
      'This person was REALLY beautiful' (Ibid: 255).

In some languages, ideophones can function as linguistic hedges in this sense. In

Kisi, for example, the reduplication of ideophones forms exclamatives:

(186) Kisi (Niger-Congo, Mel)
       Sìà   híwí   hěllé   **pûŋ-pûŋ**   ó   làmndó
       Sia   pass   salt   IDPH   to   soup
       'Sia salted the gravy excessively' (Childs 1995: 137).

Koyraboro Senni is another example of a language that uses hedges for conveying

exclamativy. In this language we can find a system of adjectival interjection-like

intensifiers. Many of them are specific to the adjective or the verb they are intensifying

(Heath 1999: 291). In example (187) we can see the intensifier interjection *batak,* which

expresses a high degree of membership of the item to the category in question; in

contrast, example (188) uses the intensifier verb *batagu,* which has the same meaning of

tar, 'be tasteless', but expresses an extremely high degree of the quality in question.

(187) Koyraboro Senni (Nilo-Saharan, Songhai)
       a   ga   tar   **batak!**
       3SG.SBJ   IMPF   be-tasteless   **INTS**
       'It is very tasteless'.

(188) [a   ga   tar]   [a   ga   **batagu]**
       [3SG.SBJ   IMPF   be-tasteless   3SgS   IMPF   **be-very-tasteless**]
       'It is utterly tasteless' (Ibid: 294).

Linguistic hedges are conceived as operators: "a linguistic hedge such as *very,*

more or less, much, essentially, slightly, etc. may be viewed as an operator which acts on

the fuzzy set representing the meaning of its operand" (Zadeh 1972: 4). In a sense,

exclamatives can be treated as hedges that perform a specific fuzzy set operation, the

operation of 'contrast intensification'. This operation is described as increasing "the

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values of $\mu_A(y)$ which are above 0.5 and diminishes those which are below this threshold" (Zadeh 1972: 15). This is actually the case of several linguistic hedges that functions as intensifiers (e.g.'very'). The result is a transformation of the fuzzy set in question in a crisper version of the set because its members acquire a higher degree of membership to the set. Figure 19 (from Zadeh 1972: 15) represents this operation of contrast intensification, which increases the membership value of the items above the threshold
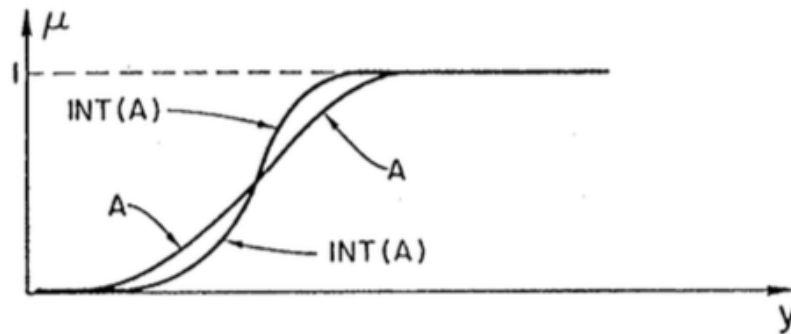
Figure 19: Operation of contrast identification in a fuzzy set.

Thus, for example, we can represent the linguistic hedge *batagu* from Koiraboro Senni in example (188) as follows:

(189) |BATAGU (F)| = INT (CON(F))

That is, the operator *batagu* performs the operation of contrast intensification by giving an extreme value of membership to the object in the fuzzy set *tasteless food*.

The operation of contrast intensification intensifies the membership value of the item towards a higher degree of membership in its category. According to Zadeh, this rearrangement makes the subset less fuzzy because the membership values become more proximate to the optimal membership level. Notice that the utterance performing such

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defuzzification necessarily entails a modification of preexisting assumptions about the membership value of the item in the category. This feature of exclamatives produces the sense of surprise usually attributed to exclamatives utterances. The process of subjectification strengthens the implicature of the membership degree being contrary to former expectations. This is the main difference with respect to regular intensifers such as *very* —which is also traditionally regarded as a contrast intensification operator (see e.g. Zadeh 1972).

Let us consider another example, the operator *ásès*, in Ket. It originates as an interrogative element that enquires for the category of the item in question (it meaning is glossed as 'what kind of'). Following is example (158), repeated here for convenience:

(190)   **ásès**   sēs   kūk
        what   river   Yenisei
        'What a river the Yenisei is!'

We can explain the semantic extension of *ásès* from an interrogative to an exclamative as going from asking for category membership to singling out the object as a salient member of the category in question.

It is worth investigating whether this analysis can be extended to English exclamative constructions. Let us consider the following examples:

(191)   Boy, how they practiced.

(192)   Wow, what a smoothie! (examples from Collins 2005).

From the perspective of hedges and categorization, the construction with an interrogative in (192) singles out the object as somehow deviating from its prototype –the smoothie is not a regular smoothie but a remarkable one. Similarly, in example (191) the

event of practicing is asserted as non-prototypical, i.e. it has at least one property that departs from the prototype.

To sum up, exclamatives can be regarded as fuzzy set operators performing the operation of contrast intensification. In addition they also express, via the subjectification of the forms, that the high degree of membership was not anticipated. For instance, in uttering the exclamative *Wow, you're really a talented artist!* the speaker uses the fuzzy set operator *really*, whose function can be described as assigning the subject a high degree of membership to the fuzzy set 'talented artists'. Notice that the assignment of the subject to the category 'artists' is not necessarily novel, while the high degree of membership is.

Thus, the exclamative construction not only conveys that the item in question has a high degree of membership to the category, but also that the speaker did not anticipate such degree of membership. As we have noted, linguistic hedges related to exclamatives express a high degree of membership to a category or a very high degree of truth of a proposition. However, exclamativity of course is not merely achieved by linguistic hedges, but also entails a shift from an objective description to a subjective evaluation. More specifically, the meaning shifts from an emotively neutral categorization to an evaluation of the item as a surprisingly salient member of a category. In this sense, exclamatives conform to Traugott's tendency I of semantic change —already cited in (90), and repeated here for convenience:

(193)   Meanings based in the external described situation > meanings based in the internal (evaluative/perceptual/cognitive) described situation (Traugott 1989: 34).

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This semantic shift very likely originates in the implicature of the high membership value not being anticipated.

6.5   Summary of the Structure of Conceptual Space

This chapter elaborated on several case studies of thetic, mirative and exclamative constructions in order to explore the relationships between these functions. We followed the results of the MDS analysis presented in chapter 5 as a research program. Accordingly, we have found the following patterns:

1) Thetic subtypes establish a structural distinction between forms related to background information and forms related to the addressee's active attention (i.e. existential vs presentational assertion).

2) Miratives are structurally similar to thetics, especially to those thetic subtypes related to the addressee's active attention and previous unawareness of the state of affairs (i.e. hot news and presentatives).

3) A semantic distinction can be established between miratives that convey surprise in a general sense and miratives that refer to the speaker's active expectations regarding the event in question. This distinction mirrors the functional distinction between thetics related to background information and thetics related to unawareness and active attention.

4) Crosslinguistically, exclamatives are related to thetics and miratives. However, exclamatives tend to be more marked constructions, more deviated from the prototypical topic-comment structure in the language in question.

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5) The exclamative function is not merely based on the expression of surprise. Rather, it is a more complex operation involving the shift of meaning from a linguistic hedge stating a high degree of membership to a category (or a high degree to which a proposition is true) to an intensifier.

6) The region of conceptual space studied involves a path of subjectification of the forms.

In the next chapter, we will explore the cognitive correlates of these findings.

CHAPTER 7: PSYCHOLOGICAL CORRELATES

In the previous chapters we have studied the relationships between thetics, miratives and exclamatives in conceptual space. However, our survey would be incomplete should we not address the topic of the psychological correlates of the linguistic phenomena we have studied so far.

Two basic principles of cognitive linguistics are that "the representation of linguistic knowledge is basically the same as the representation of other conceptual structures, and that the processes in which that knowledge is used are not fundamentally different from cognitive abilities that human beings use outside the domain of language" (Croft & Cruse 2004: 2). Thus, it is worth to look for cognitive correlates outside the linguistic domain. Moreover, according to the semantic map connectivity hypothesis already reviewed in §3.3, conceptual space is ultimately a representation of the human mind. "The conceptual space is the geography of the human mind, which can be read in the facts of the world's languages in a way that the most advanced brain scanning techniques cannot even offer us" (Croft 2001: 364).

In fact, there are several important cognitive correlates of the lingusitic facts presented in the previous chapters. These correlates strengthen the arguments of this study, as well as point to new directions in the research.

The present chapter is organized as follows: §7.1 presents the resemblance between the major thetic functions and the types of awareness as have been described in the field of neurobiology; §7.2 describes schema theory, a model used in cognitive psychology, and explains how miratives can be regarded as representations of disruptions

in a previous schema; §7.3 examines the role that exclamatives play in a cognitive-evolutionary model of surprise, as well as how the exclamative operation is performed in cognitive terms; finally, §7.4 presents a summary of the chapter.

7.1 Theticity and Awareness

As was argued in §2.1.4, existentials can have a presentative interpretation, whereas presentatives cannot have a mere existential interpretation because they already presuppose the existence of the presented entity. In our study we have concluded that weather and physical sensation statements are similar to existentials in the pragmatic-functional dimension —the difference being that weather and physical sensation are event-central whereas existentials are entity-central. Similarly, hot news statements are related to presentatives —the difference being again that hot news are event-central whereas presentatives are entity-central statements.

In this section, we will examine this functional division between thetics on the light of the study of cognitive processes related to awareness and how the perception of novel configurations.

In order to explain the cognitive correlates of the functional division between existentials and presentatives, it is necessary to address the question of how neorobiology explains awareness in general.

Neurobiology has not yet been able to explain how we perceive objects and scenes in general as unified, instead of as scattered perceptions of color, form, etc. since "there is as yet no known counterpart in the brain where this unification might take

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place" (Gray 2004: 37). This issue is known as 'the binding problem'. In dealing with it, Crick and Koch (1997) proposed the existence of three types of binding:

1) A first type, triggered by epigenetically determined conditions.

2) A second type, based on the frequency of association and overlearning (this type of binding makes possible, for example, to learn the letters of the alphabet).

3) A third type –which is the one that concerns us here— applies to "objects whose exact combination of features may be QUITE NOVEL TO US" (Ibid: 284; emphasis added). In contrast to the first two types of binding, which necessarily have a large but limited capacity, the capacity of the third type of binding is unlimited.

> The neurons actively involved [in the third type of binding] are unlikely all to be strongly connected together, at least in most cases. This binding must arise rapidly. By its very nature it is largely transitory and must have an almost unlimited potential capacity although its capacity at any one time may be limited. If a particular stimulus is repeated frequently, this third type of transient binding may eventually build up the second, overlearned type of binding (Ibid: 284).

This third type of binding is responsible for our awareness of new objects. Crick and Koch suggest that this "form of transient binding probably depends on a serial attentional mechanism", thus, they argue that "what reaches visual awareness is usually the result of this attentional step –in other words, THAT AWARENESS AND ATTENTION ARE INTIMATELY BOUND TOGETHER" (Ibid: 284; emphasis in original). The authors call this form of awareness 'working awareness'.

However, one problem remains: how is it that this combination of attention and awareness does not give rise to some sort of 'tunnel vision', only allowing us to be aware

of certain objects while disregarding others? In other words, how is the perceptual richness of our environment possible? In order to explain this fact, Crick and Koch propose the existence of two types of awareness.

> [The perceptual] richness may be mediated by another form of awareness that is very transient, being associated with iconic memory[45] and having a very large capacity at one time. This form, that we propose to call "fleeting awareness," we expect not to solve the *ad hoc* binding problem (as working awareness does) but to embody "features" that are bound only epigenetically or by overlearning. Attention can then focus on a subset of relevant items within iconic memory for further processing (Ibid: 286-87).

In other words, in order to explain the third type of binding, which concerns novel objects or features, the authors propose the existentce of two forms of awareness: fleeting awareness, which is very transient and basically comprises the perception of the 'background scenario', and working awareness, which selects specific objects from the environment as the focus of attention.

The distinction between two types of awareness finds a linguistic correlate in the distinction between the major thetic functions: the assertion of existentce and the presentational assertion. Existentials, weather, physical sensation and background clauses are linked to the expression of fleeting awareness, whereas hot news statements and presentatives are linked to the expression of working awareness (i.e. the awareness of novel configurations).

Furthermore, just as existentials do not necessarily assume the addressee's unawareness of the represented entity nor do they necessarily convey a presentational reading, fleeting awareness lacks an attentional mechanism per se, and merely encodes

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[45] Iconic memory is a "form of high-capacity, rapidly decaying (within a second or so) visual memory" (Koch 2004: 338).

"perceptual features that are bound within single neurons due to epigenetic factors or overlearning" (Koch & Crick 1994: 108). In other words, fleeting awareness is in charge of background information that most likely has already been assimilated. On the other hand, working awareness deals with novel configurations that attract our attention.

The activation of working awareness in the presence of novel objects or configurations is also attested in the study of the development of visual attention. These studies have shown that infants prefer to look at objects and patterns that they can see more clearly (e.g., objects that contrast sharply with the background, patterns having large elements, etc.), but at a later age they change their preference to novel objects and novel arrangements (see Ruff & Rothbart 1996).

Existentials, weather and physical sensation statements tend to express background information that has its correlate in fleeting awareness. On the other hand, hot news and presentative statements have a correlate in working awareness. This fact also solves the puzzling discrepancy in previous accounts of theticity. As was noted in §2.1.2, Kuroda's explains theticity as involving transient perception of events, whereas Lambrecht considers the main function of theticity as being to introduce new referents in the discourse. Now we can acknowledge that both accounts are not opposed but rather complementary. For Kuroda, theticity is related to the functions that existentials, weather, physical sensation statements and background descriptions in general convey, that is, fleeting awareness. On the other hand, Lambrecht focuses on theticity as pointing to new referents or states of affairs, that is, on theticity in relation to working awareness, as has been described in this section.

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7.2   Miratives as Schema Discrepancies

As was argued in §6.3.2, a semantic distinction can be found in miratives between those forms conveying that the event is surprising in a general sense and those conveying that the event is surprising with respect to some specific expectations. This distincion in mirative meanings, which has not been previously described, has a clear correlate in a well-established distinction in the field of cognitive psychology, explained below.

In a classic article, Charlesworth (1969) proposed a distinction between novelty and surprise. Novelty does not involve former expectations regarding the event.

> In the case of novelty, the prestimulus state of the individual can be viewed as ESSENTIALLY DEVOID OF ANY SPECIFIC EXPECTANCY ABOUT THE FORTHCOMING EVENT. If there is an anticipation of what is going to occur, it is diffuse, imprecise, or just a vague feeling that the event will be new or different than what has already been experienced…Novel events may be ineffective in producing specific expectancies or states of readiness for at least two reasons: (1) they occur without advance warning, i.e. are not preceded by stimuli that are in some way associated with them –in this sense they are unexpected– or (2) if they are preceded by such stimuli, the organism has no previous history of an association between the two stimuli. A child receiving a new toy, an adult seeing an unknown play for the first time, or a rat entering an unfamiliar open field most probably have few or no expectations. In this sense such events are not surprising. THE ONE IMPORTANT PROPERTY THEY HAVE IN COMMON IS THAT THEY ARE NEW, I.E. THEY HAVE NOT BEEN EXPERIENCED EARLIER AND HENCE FIT UNDER THE NOTION OF NOVELTY (Charlesworth 1969: 274-75; emphasis added).

On the other hand, the emotion of surprise properly, in Charlesworth's terminology, involves specific expectations regarding the outcome of the event in question.

> In the case of SURPRISE, on the other hand, THE EXPECTANCIES ARE MUCH MORE PRECISE AND DESCRIBABLE. The individual can expect in two ways: (1) he can know clearly what is to happen, but be unclear about an alternative outcome, or (2) he can know clearly what alternative events could happen but reject all but one of them. In either case, THERE ARE PRECISE EXPECTANCIES AND THESE EXPECTANCIES PRESUPPOSE SOME FORM OF COGNITIVE ELABORATION… SUCH COGNITIVE ELABORATION PRESUPPOSES COGNITIVE STRUCTURES ARE ACTIVATED,

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SO TO SPEAK, BY THE PRESENTATION OF PARTICULAR STIMULI. The stimuli have come to mean, as a result of past experience, that a certain event will ultimately follow. (Ibid: 275; emphasis added).

The distinction between novelty and surprise is still used in contemporary studies. A more recent elaboration in cognitive psychology is that between unexpected and misexpected events:

> An event is MISEXPECTED if IT CONFLICTS WITH A PREEXISTING, SPECIFIC, AND USUALLY EXPLICIT BELIEF CONCERNING THIS EVENT. For example, Mary is waiting for Bob in her office; hearing a knock at the door, she expects Bob to enter, but Bill enters instead. This event elicits surprise because it is misexpected. In contrast, an event is UNEXPECTED IN THE STRICT SENSE if it DOES NOT CONFLICT WITH AN EXPLICITLY HELD BELIEF (AT LEAST NONE THAT WAS ACTIVE, THAT IS, IN THE PERSON'S WORKING MEMORY AT THE TIME WHEN THE SURPRISING EVENT OCCURRED), ALTHOUGH IT IS INCONSISTENT WITH THE PERSON'S BACKGROUND BELIEFS. For example, even if Mary does not expect anybody in particular to visit her, she will be surprised to see Bill walk into her office if she believes that Bill is currently attending a conference abroad (Reisenzein et al. 2012: 566; emphasis added)

Hence, the mirative distinction we have found between surprise in general and counter-expectation clearly mirrors the distinction already described in cognitive psychology. Moreover, as was argued in §6.3.2, the mirative distinction is actually a correlate of the thetic distinction between existentials and presentative asssertions. Consequently, the distinction between unexpected and misexpected events in cognitive psychology has a correlate in the distinction between fleeting and working awareness. This correlate, of course, is founded on the role that attention plays in both phenomena: working awareness and the feeling of surprise in Charlesworth's sense require the subject's active attention to the event in question. Conversely, neither fleeting awareness nor the feeling of novelty involved the subject's active attention to the event or situation.

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Furthermore, the feeling of surprise involves a change in the subject's previous assumptions about the event. In the modern study of surprise, the changes that surprise produces in former assumptions are described through schema theory. "A schema theory is basically a theory about knowledge. It is a theory about how knowledge is represented and about how that representation facilitates the USE of the knowledge in particular ways" (Rumelhart 1984: 163; emphasis in original). Schema theory proposes that knowledge is organized in the mind into units called schemata. Schemata are "packets of knowledge", so to speak, including information on how to use the knowledge in question.

> A schema, then, is a data structure for representing the generic concepts stored in memory. There are schemata representing our knowledge about all concepts: those underlying objects, social situations, events, sequences of events, actions and sequences of actions. A schema contains, as part of its specification, the network of interrelations that is believed to normally hold among the constituents of the concept in question. A schema theory embodies a *prototype* theory of meaning. That is, inasmuch as a schema underlying a concept stored in memory corresponds to the *meaning* of that concept, meanings are encoded in terms of the typical or normal situations or events which instantiate that concept (Ibid: 163).

In other words, schemata are belief structures and organized knowledge that control human behavior in general. They "can be regarded as informal, unarticulated theories about objects, situations and events" (Meyer et al. 1997: 253).

Reisenzein and his colleagues have proposed a cognitive-evolutionary model of surprise based on schema theory. In this model, surprise is explained as resulting of a discrepancy between schema and input caused by an unexpected or surprising event. Figure 20 (from Reisenzein et al. 2012: 566) is a diagram of the cognitive-evolutionary model of surprise. The diagram explains the stages of surprise according to this model:

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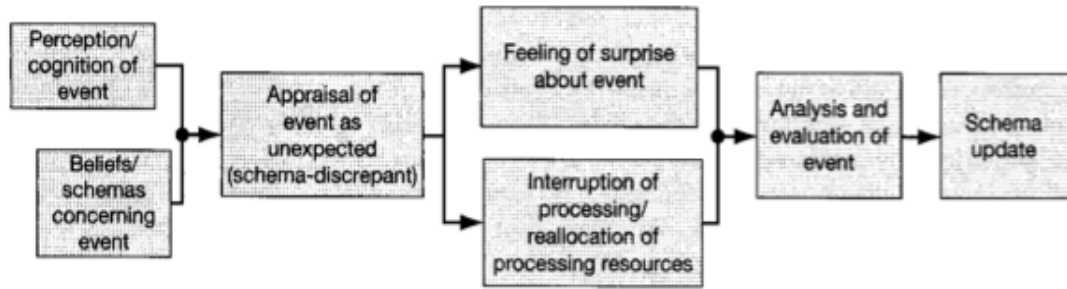
Figure 20: A cognitive-evolutionary model of surprise**.**

1) Perception of the event combined with beliefs or schemas concerning the event.

2) If the cognition of the event does not match with the existent relevant schemas, the event is appraised as schema-discrepant (i.e. unexpected).

3) The feeling of surprise arises. Processing is interrupted or processing resources are reallocated.

4) Analysis and evaluation of the surprising event.

5) Schema updating (if necessary).

Notice that the first stage is related to theticity: the perception of an event is not necessarily surprising, that is, the subject can be aware of the event without considering it as schema-discrepant. Surprise arises specifically when the event does not match current schemata. This is the mirative stage properly, in which the feeling of surprise arises.

Moreover, the function of miratives as conveying a discrepancy in the current schemata explains their relationships with the following linguistic functions:

1) Theticity, which is realted to unawareness and thus can refer to novel configurations.

2) Polarity focus and echo questions, which potentially express that the statement causes a discrepancy in the current schema.

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3)   Evidentials, which convey sources of information, and thus can mark the contrast between assimilated/unassimilated information (other functions such as irrealis can also convey this contrast).[46]

The last stages of surprise according to Figure 20, analysis and evaluation of the event and schema update are rather associated to exclamatives. We will turn our attention to these stages in the following section.

7.3 Exclamatives as Evaluations of a Surprising Event

Miratives appraise the event as schema-discrepant. The next step in the process represented in Figure 20 is to analyze and evaluate the event. Exclamatives express this evaluation.

In respect to the later stages of surprise, Reisenzein and his collaborators explain the following:

> The subjective experience or 'feeling' of surprise can be regarded as the manifestation in consciousness of the encountered discrepancy between activated schema and newly acquired information. Because the intensity of experienced surprise is closely related to the degree of unexpectedness of the eliciting event, the feeling of surprise could simply be the conscious awareness of the signal produced by the schema discrepancy detector. (According to the model, this signal is characterized by a specific quality that codes the fact that a schema discrepancy has occurred, and AN INTENSITY THAT CODES THE DEGREE OF THE SCHEMA DISCREPANCY) (Reisenzein et al. 2012: 567; emphasis added).

Exclamatives represent the schema discrepancy as a scalar extent —as was argued in §2.3, exclamatives always refer to a scalar extent. They do not specify the extent but merely convey that it is higher than expected —or lower than expected, if that is the case.

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[46] See §2.2; see also DeLancey 1997.

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Notice that exclamatives do not code the intensity of the schema discrepancy, but they can somehow express it iconically (by intonation or structural coding).

Furthermore, exclamatives do not only express the intensity of the discrepancy but also evaluate the event, as it is stated in the later stages of surprise. This can be illustrated with Moutaouakil's observation that exclamatives can have specialized forms to convey a positive or a negative evaluation of the state of affairs. We already have reviewed Moutaouakil's examples (see §2.3). Another example is found in some lamentative constructions, as the one found in Kwaza:

(194)   *ere'ri*-ʔwɥ̃̃'tɛ-ki
         grow-pity-DECL
         'It is a pity the dog grew so much' (van der Voort 2004).

This evaluation is very significant because, strictly speaking, such evaluation is not part of the feeling of surprise, which rather has a 'neutral' character for the following reasons:

> (a) In contrast to paradigmatic emotions such as joy or fear, surprise does not presuppose the appraisal of the eliciting event as positive (desire-congruent) or negative (desire-incongruent); and corresponding to this, (b) the feeling of surprise is per se hedonically neutral, rather than pleasant or unpleasant (Macedo et al. 2009: 273)

Of course, the functions of assessment and evaluation of the surprising event are consistent with the fact that exclamative constructions are related to linguistic hedges that express a high degree of membership to a category —see §6.4.2.3.

In this respect, it is worth noticing that categorization is a fundamental cognitive process.

> Human beings are categorizing creatures par excellence. Our ability to function in the complex physical and social world in which we find ourselves depends on elaborate categorizations of things, processes, persons, institutions, and social

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relations. We are able to create and operate with literally tens of thousands, perhaps hundreds of thousands of categories, ranging from the extremely fine-grained to the highly general. Moreover, categorization is flexible, in that we can modify existing categories in order to accommodate new experiences, and we can create new categories whenever the need arises (Taylor 2003: xi)

We already noticed that exclamatives operate over fuzzy sets (see §6.4.2.3). As was explained, a fuzzy set is a set with no clear delimitations. Membership to a fuzzy set is a matter of degree. That exclamatives always operate over fuzzy sets has been already observed —although not using the same terminology— by Michaelis when she argued that an exclamative such as *How prime is this number!* is ill-formed because the property of being prime is discrete (see §2.3). In fact, Zadeh (2000) argues that fuzzy sets represent a more accurate picture of our perceptions.

7.4   Summary of the Psychological Correlates

In this chapter I suggested that the phenomena described in this investigation has several psychological correlates. The first one is found in neurobiology, which has described two types of awareness, fleeting and working awareness, which I suggest correspond to the existential and the presentational assertion respectively. This correspondence somehow solves the puzzle of the existence of two seemingly opposite accounts for theticity: thetics as transient perceptions or background descriptions, and as introductions of topics in the discourse. Our investigation has shown that these are actually different, yet still related, thetic functions.

Interestingly, the distinction between fleeting and working awareness also mirrors in the distinction between unexpected and misexpected events described in cognitive psychology —just as miratives mirror thetics in this matter, see §6.3.2.

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Several of the findings described in this research, especially regarding the relationship between miratives and exclamatives can be explained in reference to the cognitive-evolutionary model of surprise, based on schema theory. This model acknowledges that surprise is caused by a discrepancy in a given schema. Miratives express this discrepancy.

This model also clarifies the role that exclamatives have in the process of surprise. Exclamatives convey the intensity of the schema discrepancy and evaluate the surprising state of affairs, appraising it in positive or negative terms.

Figure 21 summarizes these findings by representing the relationship between the functions described and the cognitive process related to them.

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THETIC STAGE MIRATIVE STAGE   EXCLAMATIVE STAGE
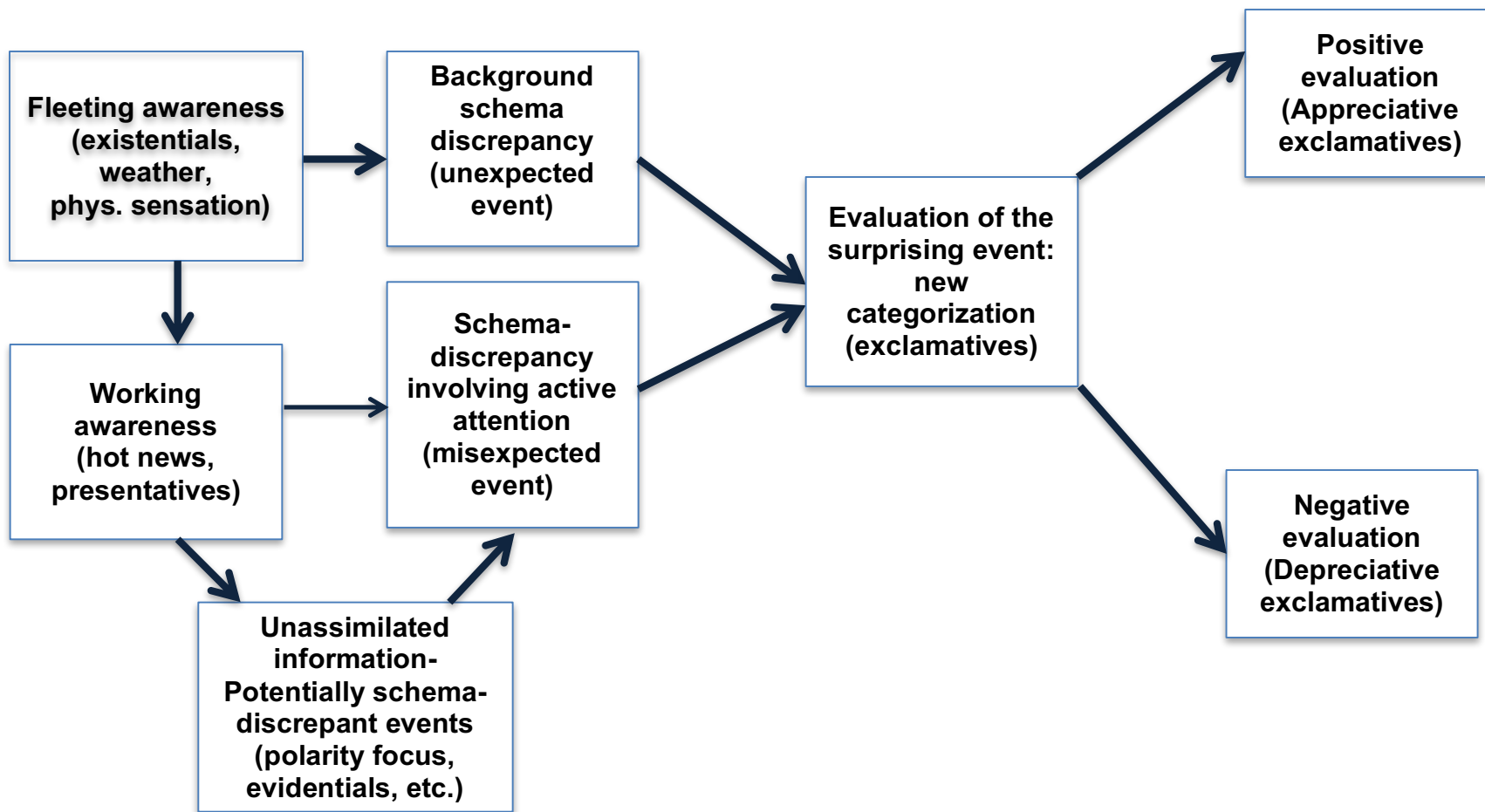
Figure 21: The functions and the cognitive processes related to them.

CHAPTER 8: CONCLUSIONS

This final chapter summarizes the major findings of this investigation, as well as points to further developments of the research.

On the one hand, this study has clarified several aspects regarding the specific functions compared.

In respect to the question possed in Sasse (2006), "is theticity a unitary phenomenon?" (see §2.1.2), our results differ from Sasse's view of theticity as five independent thetic subtypes. Instead, we consider that theticity comprises two functions, the existential and the presentational assertion, which are strongly related and yet clearly distinguished from one another.

As for the existential assertion, one interesting point is that, crosslinguistically, languages seem to follow Kant's view of the existential assertion as a non-predication since most languages use a defective verb, a copula or omit the verb in order to establish it.[47]

This study has also clarified the often neglected problem of the distinctions among mirative meanings. We have seen that miratives tend to distinguish between unexpected and misexpected events. This is a basic distinction that appears crosslinguistically consistent. This of course does exclude the consideration of other mirative subtypes (e.g. 'deferred realization' can be proposed as a subtype of misexpected mirativity).

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[47] Cfr. Sasse (1987: 556-57)

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We also found that miratives are usually subjectified forms, that is, they integrate the speaker's perspective in their meaning. This is manifest in the sources of mirativity, which always represent a less subjectified function with respect to miratives. Since the present investigation is the first study of miratives in a relatively large language sample, it also sheds light regarding the sources of mirativity, which are not only evidentials but also thetics, polarity focus, and echo questions, among others. Moreover, one important psychological correlate of miratives is that they overtly recognize an existing discrepancy in a schema, and the functions from which miratives are derived are related to such discrepancy. For example, indirect evidentials can be considered, as DeLancey has pointed out,[48] as deviations from an ideal of knowledge. A similar point can be made for echo questions, irrealis forms and polarity focus. This property of miratives being related to forms that represent noncanonical knowledge or unassimilated information is of course also an important correlate between miratives and thetics, since thetics deviate from the prototypical topic-comment construction, i.e. from a more canonical information structure configuration.

To sum up, the present research also has contributed to expand the view of mirativity as a complex phenomenon that is not only related to evidentiality, but also to other functions as polarity focus and echo questions.

Also, the specificity of the exclamative function has been clarified. As was argued in §2.3.1, the accounts of exclamatives in the literature have been too diverse and contradictory, whereas they have also been too one-sided in the sense that they have

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[48] See §2.2.

focused mainly on the relationship between exclamatives and interrogatives. Instead of focusing on a subtype of exclamative construction and extending its analysis to the general function, our approach involved the observation of the diversity of exclamative constructions and its relationships with other functions —especially with thetics and miratives. By following this approach, we obtained a more accurate representation of the exclamative function, in which exclamatives are related to a novel and surprising categorization of an event or entity.

This categorization finds a psychological correlate in the necessity of analyzing surprising events in order to assimilate them. In this approach, the use of question words in exclamative utterances is explained by the relationship between exclamatives and information questions that inquire about the category to which an entity pertains —or the extent to which a proposition is true. This accounts relates question-like exclamatives with those exclamative constructions using other devices, including those that are similar to thetics (e.g. to presentatives or existentials).

Nevertheless, the first and major contribution of this research is the explanation of the relationship between thetics, miratives and exclamatives. It has been shown that these functions are related in conceptual space, and that together they establish a path of subjectification by which the linguistic forms incorporate to the meaning the speaker and hearer's perspective. Moreover, it has been shown that an important correlation exists between the conceptual space that this functions develop and the cognitive process of surprise as described in cognitive psychology.

Finally, the present study has shown the usefulness of applying MDS to linguistic data. MDS proved to be a powerful heuristic tool to investigate the relationships among the functions studied. The results of the MDS analysis suggested a configuration that could have appeared as counter-intuitive in the first place.

On the other hand, the results also suggest paths for further research. First, more investigation is needed regarding the relationships between miratives, exclamatives and other functions. Also, the pragmatic of the functions, especially of exclamatives, has been barely described. As has been noticed, corpus studies have been common for thetics but scarce for miratives and exclamatives. It would be useful to study these functions in linguistic corpora in order to find what discourse and pragmatic tasks they achieve. In addition, the subject of the psychological correlates of the functions could also be explored by psycholinguistic research.

Finally, one important aspect of this investigation is that it shows a path, not previously described for any other linguistic functions, between information structure (theticity), modality (mirativity) and sentence types (exclamatives). It would be interesting to investigate whether a relationship can also be established between other information structure configurations, other modalities and other sentence types. Thus, the results of this investigation could be a point of departure for our understanding of how modality and sentence types arise in the first place.

APPENDIX A: THE LANGUAGE SAMPLE

The following table shows the language sample ordered by linguistic area. The main reference for genetic classification was Dryer and Haspelmath (2013). Lewis et al. (2013) was used as a secondary source.

Notice that the first version of the sample erroneusly included two Mixe-Zoque languages, Ayutla Mixe and Sierra Popoluca. This error was corrected for the second analysis, in which Makah was used instead of Ayutla Mixe.

Language	Area	Family	Genus	ISO-639-3
Doyayo	Africa	Niger-Congo	Adamawa	dow
Fongbe	Africa	Niger-Congo	Kwa	fon
Hausa	Africa	Afro-Asiatic	West Chadic	hau
Kagulu	Africa	Niger-Congo	Bantoid	kki
Khwe	Africa	Khoisan	Central Khoisan	xuu
Kisi	Africa	Niger-Congo	Mel	kks
Koyraboro Senni	Africa	Songhai	Songhai	ses
Lango	Africa	Eastern Sudanic	Nilotic	laj
Mbay	Africa	Central Sudanic	Bongo-Bagirmi	myb
Sheko	Africa	Afro-Asiatic	North-Omotic	she
Somali	Africa	Afro-Asiatic	Lowland East-Cushitic	som
Supyire	Africa	Niger-Congo	Gur	ssp
Bantawa	Asia	Sino-Tibetan	Mahakiranti	bap
Biblical Hebrew	Asia	Afro-Asiatic	Semitic	hbo
Japanese	Asia	Japanese	Japanese	jpn
Kannada	Asia	Dravidian	Southern Dravidian	kan
Ket	Asia	Yenisean	Yenisean	ket
Kolyma Yukaghir	Asia	Yukaghir	Yukaghir	yux
Lao	Asia	Tai-Kadai	Kam-Tai	lao
Lezgian	Asia	Nakh-Daghestanian	Lezgic	lez
Mongsen Ao	Asia	Sino-Tibetan	Kuki-Chin	njo
Nivkh	Asia	Nivkh	Nivkh	niv
Qiang	Asia	Sino-Tibetan	Qiangic	qxs
Semelai	Asia	Austro-Asiatic	Aslian	sza
Turkish	Asia	Altaic	Turkic	tur

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Language	Area	Family	Genus	ISO-639-3
Udihe	Asia	Altaic	Tungusic	ude
Arabana	Australia	Pama-Nyungan	Central Pama-Nyungan	ard
Bininj Gun-Wok	Australia	Gunwinyguan	Gunwinygic	gup
Gooniyandi	Australia	Bunuban	Bunuban	gni
Kuuk-Thaayorre	Australia	Pama-Nyungan	Northern Pama-Nyungan	thd
Mangarrayi	Australia	Mangarrayi-Maran	Mangarrayi	mpc
Ngiyambaa	Australia	Pama-Nyungan	Southeastern Pama-Nyungan	wyb
Arvanitika	Europe	Indo-European	Albanian	aat
Basque	Europe	Basque	Basque	eus
English	European	Indo-European	Germanic	eng
French	European	Indo-European	Romance	fra
Hungarian	Europe	Uralic	Ugric	hun
Russian	Europe	Indo-European	Slavic	rus
Arapaho	North-America	Algic	Algonquian	arp
Ayutla Mixe[49]	North-America	Mixe-Zoque	Mixe-Zoque	mto
Crow	North-America	Siouan	Core Siouan	cro
Cupeño	North-America	Uto-Aztecan	California Uto-Aztecan	cup
Haida	North-America	Haida	Haida	hai
Izaj	North-America	Mayan	Mayan	itz
Jamul Tiipay	North-America	Hokan	Yuman	dih
Kiowa	North-America	Kiowa-Tanoan	Kiowa-Tanoan	kio
Koasati	North-America	Muskogean	Muskogean	cku
Makah[50]	North-America	Wakashan	Southern Wakashan	myh
Musqueam	North-	Salishan	Central Salish	hur

[49] Used only in the first coding and analysis. See above.
[50] Used only in the second coding and analysis. See above.

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Language	Area	Family	Genus	ISO-639-3
	America			
Purépecha	North-America	Tarascan	Tarascan	tsz
Sierra Popoluca	North-America	Mixe-Zoque	Mixe-Zoque	poi
Slave	North-America	Na-Dene	Athapaskan	den
Sochiapan Chinantec	North-America	Oto-Manguean	Chinantecan	cso
West Greenlandic	North-America	Eskimo-Aleut	Eskimo	kal
Kokota	Oceania	Austronesian	Oceanic	kkk
Tagalog	Oceania	Austronesian	Greater Central Philippine	tgl
Imonda	Papua New Guinea	Border	Border	imn
Kwomtari	Papua New Guinea	Kwomtari-Baibai	Kwomtari	kwo
Lavukaleve	Papua New Guinea	Solomons East Papuan	Lavukaleve	lvk
Manambu	Papua New Guinea	Sepik	Middle Sepik	mle
Oksapmin	Papua New Guinea	Oksapmin	Oksapmin	opm
Teiwa	Papua New Guinea	Trans-New Guinea	Pantar	twe
Aguaruna	South-America	Jivaroan	Jivaroan	agr
Apinayé	South-America	Macro-Ge	Ge-Kaingang	apn
Awa Pit	South-America	Barbacoan	Barbacoan	kwi
Cavineña	South-America	Tacanan	Tacanan	cav
Chipaya	South-America	Uru-Chipaya	Uru-Chipaya	cap
Emerillon	South-America	Tupian	Wayampí	eme
Jarawara	South-America	Arauan	Arauan	jaa
Kwaza	South-America	Kwaza	Kwaza	xwa
Mapuche	South-America	Araucanian	Araucanian	arn

Language	Area	Family	Genus	ISO-639-3
	America			
Mosetén	South-America	Mosetenan	Mosetenan	cas
Puinave	South-America	Puinave	Puinave	pui
Sabanê	South-America	Nambiquaran	Nambiquaran	sae
Tariana	South-America	Arawakan	Inland Northern Arawakan	tae
Trio	South-America	Cariban	Cariban	tri
Trumai	South-America	Trumai	Trumai	tpy

APPENDIX B: DATA FOR THE FIRST MDS ANALYSIS

Following is the data coded for the first MDS analysis (see Chapter 4). The columns read as follows:

Language is the language of the construction coded.

Construction name contains a descriptive label for each construction and its bibliographical source. If no page number is indicated, the whole paper is devoted to the construction.

LgCx is a code for each construction for identification purposes. It consists of the ISO 639-3 code plus a short acronym formed of a maximum of three characters. These characters can represent the following features: A: relative clause; B: physical sensation statement; C: suffix; D: deictic; E: existential; F: left-dislocation; G: genitive construction; I: prosodically marked construction; L: clitic; M: mirative; N: noun incorporation; S: intensifier; O: No additional constructional features; P: particle; Q: question-word or interrogative element; R: presentative; T: thetic; U: focus; V: SV inversion; W: weather statement; X: exclamative; Y: polarity marker; Z: nominalization.

The rest of the columns are the features coded: P0: verbless construction; P1: defective verb; P2: copula; P3: lexical verb; S0: no subject marking; S1: subjectless construction; S2: SV inversion; C0: The construction does no possess other features; C1: affix; C2: particle or clitic; C3: insubordination; C4: nominal incorporation; C5: interrogative element; C6: deictic; C7: polarity marker; C8: genitive; C9: intensifier; C10: complementizer; C11: incomplete sentence; C12: left dislocation; C13: focus marking; C14: nominalization; C15: interrogative-exclamative word; I1: not prosodically

marked; I2: accompanying intonation; I3: only intonation. For a detailed explanation of these features, see §4.1.

The letters below each constructional feature read as follows:

Y: The construction has the feature.

N: The construction lacks the feature.

M: There was no available information regarding this feature for the construction. Generally, this was only the case for information on intonation.

Language	Constr. Name	LgCx	P0	P1	P2	P3	S0	S1	S2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	I1	I2	I3
Aguaruna	Mirative/thetic (Overall 2007: 375, 472)	agrMT	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Aguaruna	Existential (Ibid: 121)	agrTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Aguaruna	Thetic (Ibid: 480)	agrTL	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	M	M	M
Apinaje	Existential (De Oliveira 2005: 247)	apnTE	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Apinaje	Exclamatives (Ibid: 155)	apnXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	M	M	M
Arabana	Existential (Hercus 1994: 292)	ardTE	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Arabana	Existential 2 (Ibid: 294)	ardTEO	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Arabana	Exclamative (Ibid: 253)	ardXP	Y	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Arapaho	Mirative (Cowell 2008: 293, 328)(293 & 328)	arpMP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Arapaho	Present./Mirat. (Ibid: 309)	arpMTR	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Arapaho	Existential (Ibid: 193)	arpTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Arapaho	Existential 2 (Ibid: 429)	arpTE	Y	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Arapaho	Thetic / Present. (Ibid: 312)	arpTR	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Arapaho	Presentational 2 (Ibid: 311)	arpTRD	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Arapaho	Thetic 2 (Ibid: 400)	arpTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Arapaho	Exclamative (Ibid: 253)	arpXQ	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Arvanitika	Thetic 2 (Sasse 1991: 423-24)	aatTI	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y
Arvanitika	Thetic Y (Ibid: 423)	aatTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Arvanitika	Exclamative Y (Ibid: 371)	aatXQ	N	N	Y	N	Y	N	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M
Arvanitika	Exclamative 2 (Ibid: 372)	aatXV	Y	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Awâ Pit	Existential (Curnow 1997: 122)	kwiTE1	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Awâ Pit	Existential 2 (Ibid: 127-28)	kwiTE2	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Awâ Pit	Weather (Ibid: 199)	kwiTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Awâ Pit	Exclamatives (Ibid: 353)	kwiXS	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	M	M	M
Ayutla Mixe	Mirative (Romero-Mendez 2009: 245)	mtoMP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M

Language	Constr. Name	LgCx	P0	P1	P2	P3	S0	S1	S2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	I1	I2	I3
Ayutla Mixe	Thetic (Ibid: 294)	mtoTD	N	N	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Ayutla Mixe	Existential (Ibid: 184)	mtoTE1	N	N	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Ayutla Mixe	Existential 2 (Ibid: 421)	mtoTE2	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Ayutla Mixe	Exclamative (Ibid: 660)	mtoXD	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Bantawa	Mirative (Doornenbal 2009: 314)	bapMP	N	N	N	Y	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Bantawa	Thetic (Ibid: 314)	bapTP	N	N	N	Y	Y	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Bantawa	Exclamative (Ibid: 293)	bapXQ	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	Y	Y	N	N	N	N	N	N	N	N	M	M	M
Bantawa	Exclamative 2 (Ibid: 301)	bapXS	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Basque	Existential (Hualde & Ortiz de Urbina 2003: 368)	eusTE	N	N	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Basque	Thetic (Bellver & Michaelis 1999)	eusTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Basque	Weather (Hualde & Ortiz de Urbina 2003: 377)	eusTW1	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Basque	Weather 2 (Ibid: 377)	eusTW2	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Basque	Relative Excl. (Ibid: 568)	eusXA1	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Basque	Relative Excl. 2 (Ibid: 571)	eusXA2	N	N	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Basque	Dem. Exclamatives (Ibid: 566)	eusXD	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Basque	Left-disloc. excl (Ibid: 568)	eusXF	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	Y	N
Basque	Possessive Excl. (Ibid: 572)	eusXG	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Basque	Excl particle (Ibid. 569)	eusXP	N	N	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	M	M	M
Basque	Wh exclamatives (Ibid: 564)	eusXQ	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	Y	N	N	N	N	M	M	M
Basque	Affirmative Excl. (Ibid: 571)	eusXY	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Biblical Hebrew	Thetic marker (Van der Merwe et al. 1999: 328-30)	hboTD	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Biblical Hebrew	Existential (Ibid: 320-21)	hboTE	Y	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Biblical Hebrew	Presentative (Ibid: 328-30)	hboTR	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Biblical Hebrew	New Topics (Shimasaki 2002: 143-84)	hboTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Biblical Hebrew	Wh- Exclamative (Gesenius et al. 1910: §148)	hboXQ	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Bininj Gun-Wok	Phys. Pain (Evans 2003: 454)	gupTB	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M

Language	Constr. Name	LgCx	P0	P1	P2	P3	S0	S1	S2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	I1	I2	I3
Bininj Gun-Wok	Existential (Ibid: 561)	gupTE	N	N	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Bininj Gun-Wok	Thetic (Ibid: 478)	gupTN	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Bininj Gun-Wok	Exclamative (Ibid: 144)	gupXG	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Bininj Gun-Wok	Exclamative 2 (Ibid: 354)	gupXN	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Cavineña	Existential (Guillaume 2008: 162)	cavTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Cavineña	Presentative (Ibid: 525)	cavTR	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Cavineña	Mirative/Exclamative (Ibid: 651)	cavXM	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Cavineña	Exclamatives (Ibid: 381)	cavXS	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Chipaya	Mirative (Cerrón-Palomino 2006: 167)	capMC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Chipaya	Thetic (Ibid: 168)	capTC	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Chipaya	Existential (Ibid: 203)	capTE	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Chipaya	Weather (Ibid: 198)	capTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Crow	Mirative/thetic (Graczyk 2007: 328)	croMT	N	Y	N	Y	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M
Crow	Existential (Ibid: 317)	croTE	N	Y	N	N	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M
Crow	Presentative (Ibid: 275)	croTR	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Crow	Exclamative (Ibid: 396)	croXP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Cupeño	Mirative (Hill 2005: 66)	cupMP	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Cupeño	Existential (Ibid: 152)	cupTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Cupeño	Weather (Ibid: 124)	cupTW	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	M	M	M
Doyayo	Existential (Wiering & Wiering 1994: 160)	dowTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Doyayo	Exclamative (Ibid: 247)	dowXA	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Emerillon	Mirative (Rose 2003: 414)	emeMQ	N	N	N	Y	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M
Emerillon	Existential Y (Ibid: 267)	emeTE	N	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Emerillon	Existential 2 (Ibid: 267)	emeTEO	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
English	Existential (there is/ are)	engTE	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
English	Thetic (Hot news)	engTI	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y
English	Weather (*It rains*)	engTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N

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English	Antitopic Excl. (Michaelis & Lambrecht 1996a: 384)	engXI	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y
English	Bare NP Excl. (Ibid: 387)	engXO	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
English	What-a Excl. (Ibid: 385)	engXQ	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N
English	Degree-Adv. Excl. (Ibid: 386)	engXS	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N
English	Inversion Excl. (Ibid: 383)	engXV1	N	N	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
English	Nominal Extrapos. (Ibid: 387)	engXV2	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Fongbe	Surprise Mark. (Lefebvre & Brousseau 2002: 126)	fonMP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Fongbe	Body States (Ibid: 251)	fonTB	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Fongbe	Existentials (Ibid: 149)	fonTE1	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Fongbe	Existentials 2 (Ibid: 278)	fonTE2	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Fongbe	Presentative (Ibid: 127)	fonTR	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Fongbe	Weather (Ibid: 245)	fonTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Fongbe	Exclamatives (Ibid: 378)	fonXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
French	Thetic Y (Sasse 1987: 538)	fraTA1	N	Y	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
French	Thetic 2 (Ibid: 538)	fraTA2	N	N	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
French	Thetic 5 (Ibid: 539)	fraTA3	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
French	Thetic N (Ibid: 539)	fraTA4	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
French	Thetic 3 (Ibid: 539)	fraTB	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
French	Existential (*Il y a*)	fraTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
French	Thetic 4 (Ibid: 539)	fraTR	N	N	N	Y	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
French	Weather (*Il pleut*)	fraTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
French	Complementizer Excl (Marandin 2008: 438)	fraXL	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	Y	N
French	Wh exclamatives (Ibid: 438)	fraXQ	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N
French	Intensifier Excl. (Ibid: 438)	fraXS1	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
French	Indefinite Excl. (Ibid: 438)	fraXS2	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
French	Inversion Excl. (Judge & Healey 1995: 427)	fraXV	Y	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Gooniyandi	Mirative/intens. (McGregor 1990: 467)	gniMP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M

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Gooniyandi	Existent/ Thetic (Ibid: 313)	gniTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Gooniyandi	Existential (Ibid: 304)	gniTEO	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Gooniyandi	Presentative (Ibid: 305)	gniTR	Y	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M
Haida	Mirative 3 (Enrico 2003: 160)	haiMQ	N	N	N	Y	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N
Haida	Thetic / Mirative 2 (Ibid: 159)	haiMTL	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	Y	N
Haida	Thetic / Mirative (Ibid: 156)	haiMTP	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Haida	Physical pain (Ibid: 299)	haiTB	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y
Haida	Existential (Ibid: 672, 886)	haiTE	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Haida	Thetic (Ibid: 202)	haiTU	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	M	M	M
Haida	Weather (Ibid: 86)	haiTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Haida	Exclamative (Ibid: 158)	haiXL1	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	Y	N
Haida	Exclamative 2 (Ibid: 160)	haiXL2	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	Y	N	N	N	Y	N
Haida	Exclamative N (Ibid: 164)	haiXL3	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	Y	N
Haida	Exclamative 3 (Ibid: 162)	haiXQ1	N	N	N	Y	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N
Haida	Exclamative 7 (Ibid:165-66)	haiXQ2	N	N	N	Y	Y	N	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	Y	N
Haida	Exclamative 4 (Ibid:163)	haiXS1	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N
Haida	Exclamative 5 (Ibid:164)	haiXS2	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N
Haida	Exclamative 8 (Ibid:166)	haiXY	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	N	N	N	N	N	Y	N
Hausa	Existentials (Newman 2000: 178)	hauTE	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Hausa	Thetic (Hartmann & Zimmermann 2007: 18)	hauTP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	Y	N	N
Hausa	Presentational (Newman 2000: 181)	hauTR	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Hausa	Derived excl. (Ibid: 177)	hauXC	Y	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Hausa	Existent. excl. (Ibid: 179)	hauXEG	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Hausa	Equative excl. (Ibid: 165)	hauXL	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	M	M	M
Hungarian	Existential (Kenesei et al. 1998: 64)	hunTE	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
Hungarian	Thetic SV topic (Sasse 1995)	hunTI	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
Hungarian	Presentative (Kenesei et al. 1998: 161)	hunTR	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M

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Hungarian	Thetic VS (Sasse 1995)	hunTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Hungarian	Relative Excl. (Lipták 2006: 344)	hunXA	N	N	N	Y	Y	N	N	N	N	M	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Hungarian	De-Exclamative (Ibid: 344)	hunXP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Hungarian	Wh-Exclamative (Ibid: 344)	hunXQ	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	Y	N
Hungarian	Negative Excl. (Kenesei et al. 1998: 26)	hunXY	N	N	N	Y	Y	N	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M
Imonda	Physical (Seiler 1985: 139)	imnTB	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Imonda	Existential (Ibid: 157)	imnTE	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Imonda	Weather (Ibid: 106)	imnTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Imonda	Exclamatives (Ibid: 35)	imnXP	Y	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Itzaj Maya	Existential 2 (Hofling 2000: 202, 407)	itzTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Itzaj Maya	Existential 3 (Ibid: 408)	itzTEO	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Itzaj Maya	Existential / pres. (Ibid: 197)	itzTR1	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Itzaj Maya	Existent. /pres. 2 (Ibid: 310)	itzTR2	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Itzaj Maya	Thetic (Ibid: 334)	itzTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Itzaj Maya	Exclamative 2 (Ibid: 245)	itzXP	Y	N	N	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Itzaj Maya	Exclamative (Ibid: 236)	itzXS	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	M	M	M
Jamul Tiipay	Present/Thetic (Miller 2001: 348)	dihTR	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Jamul Tiipay	Exclamative (Ibid: 270)	dihXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	M	M	M
Japanese	Existentials (Martin 1975: 194)	jpnTE	N	N	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Japanese	Thetics (Kuroda 1972b)	jpnTP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Japanese	Exclamative 3 (Terada 1995: 214)	jpnXG	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	M	M	M
Japanese	Exclamative (Martin 1975:757)	jpnXL	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	M	M	M
Japanese	Exclamatives (Ono 2006: 68)	jpnXP	N	N	N	Y	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Japanese	Exclamative 4 (Terada 1995: 215)	jpnXV	Y	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Japanese	Exclam. 5 (Ibid: 215)	jpnXZ	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	M	M	M
Jarawara	Mirative (Dixon 2004: 206)	jaaMC	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Jarawara	Existential/Thetic (Ibid: 380)	jaaTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M

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Jarawara	Thetic (Ibid: 167)	jaaTP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Jarawara	Weather (Ibid: 125, 380)	jaaTW	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Jarawara	Exclamative 2 (Ibid: 241)	jaaXC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Jarawara	Exclamative (Ibid: 168)	jaaXP	Y	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Jarawara	Exclamative/Thetic (Ibid: 166)	jaaXTC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kagulu	Existentials (Petzell 2008: 165)	kkiTE	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kagulu	Weather (Ibid: 158)	kkiTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kagulu	Exclamatives Y (Ibid: 180)	kkiXO	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kannada	Existential (Sridhar 1990: 1)	kanTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kannada	Thetic (Ibid: 139)	kanTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kannada	Exclamative (Ibid: 150)	kanXQ	N	N	Y	N	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M
Ket	Existentials (Werner 1997: 315)	ketTE	N	Y	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ket	Thetics (Vajda 2004: 90)	ketTP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ket	Weather (Werner 1997: 339)	ketTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ket	Exclamative (Vaijda 2004: 32)	ketXQ	Y	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M
Khwe	First-sentence (Kilian-Hatz 2008: 79)	xuuTD	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Khwe	Existentials (Ibid: 251)	xuuTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Khwe	Presentative (Ibid: 249)	xuuTR	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Khwe	Excl. (Ibid: 197 & 201)	xuuXS	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	Y	N
Kiowa	Mirative (Watkins 1984: 223)	kioMP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kiowa	Physical pain (Ibid: 102)	kioTB	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kiowa	Existential (Ibid: 211)	kioTE	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Kiowa	Presentative (Ibid: 192)	kioTR	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kiowa	Exclamative (Ibid: 183, 249)	kioXQ	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Kisi	Existentials (Childs 1995: 122)	kssTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kisi	Weather (Ibid: 122)	kssTW	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kisi	Exclamatives (Ibid: 293)	kssXQ	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M

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Kisi	Idph. (Ibid: 122, 137, 251)	kssXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Koasati	Existential (Kimball 1991: 251, 453)	ckuTE	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Koasati	Weather (Ibid: 173)	ckuTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Koasati	Exclamative (Ibid: 309)	ckuXA	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Koasati	Exclamative 2 (Ibid: 483)	ckuXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Kokota	Existential-thetic (Palmer 2009: 214)	kkkTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kokota	Weather (Ibid: 127)	kkkTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kokota	Exclamative (Ibid: 269)	kkkXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Kolyma Yukaghir	Existential (Maslova 2003: 124, 445)	yuxTE	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Kolyma Yukaghir	1st senten. (Ibid: 262, 471)	yuxTO	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kolyma Yukaghir	Presentative (Ibid: 119)	yuxTR	Y	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kolyma Yukaghir	Thetic (Ibid: 464)	yuxTU	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	M	M	M
Kolyma Yukaghir	Weather (Ibid: 127)	yuxTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kolyma Yukaghir	Exclamatives (Ibid: 489)	yuxXQ	N	N	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Koyraboro Senni	Existentials (Heath 1999: 180)	sesTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Koyraboro Senni	Presentative (Ibid: 196)	sesTR1	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Koyraboro Senni	Presentative 2 (Ibid: 196)	sesTR2	N	N	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Koyraboro Senni	Presentative 3 (Ibid: 197)	sesTR3	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N
Koyraboro Senni	Thetic (Ibid: 204)	sesTU	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	M	M	M
Koyraboro Senni	Exclamative (Ibid: 293)	sesXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Kuuk Thaayorre	Mirative (Gaby 2006: 415)	thdMC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kuuk Thaayorre	Existential (Ibid: 477)	thdTE	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kuuk Thaayorre	Thetic (Ibid: 581)	thdTP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kuuk Thaayorre	Exclamative (Ibid: 247)	thdXQ	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	M	M	M
Kuuk Thaayorre	Exclamative 2 (Ibid: 613)	thdXS	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Kwaza	Existential (van der Voort 2004: 293)	xwaTE1	Y	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M

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Kwaza	Existential 2 (Ibid: 227)	xwaTE2	N	N	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kwaza	Thetic (Ibid: 292)	xwaTP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kwaza	Weather (Ibid: 213)	xwaTW	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kwaza	Exclamative (Ibid: 238)	xwaXC1	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Kwaza	Lamentative (Ibid: 547)	xwaXC2	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kwaza	Exclamative 2 (Ibid: 549)	xwaXC3	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	M	M	M
Kwaza	Mirative / Exclamative (Ibid: 554)	xwaXMC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Kwaza	Exclamative 3 (Ibid: 601)	xwaXP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Kwomtari	Existential (Spencer 2008: 105)	kwoTE	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Kwomtari	Exclamative (Ibid: 140, 148)	kwoXP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lango	Existential (Noonan 1992: 147)	lajTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lango	Weather (Ibid: 188)	lajTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lango	Exclamatives (Ibid: 187)	lajXQ	N	N	Y	N	Y	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Lao	Existential (Enfield 2007: 108)	laoTE	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Lao	Thetic (Ibid: 158)	laoTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lao	Exclamative (Ibid: 250)	laoXS1	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Lao	Exclamative 3 (Ibid: 255)	laoXS2	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N
Lao	Exclamative 2 (Ibid: 250)	laoXY	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N	M	M	M
Lavukaleve	Surprise marker (Terrill 2003: 437)	lvkMC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lavukaleve	Existential (Ibid: 196)	lvkTE	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Lavukaleve	Thetic (Ibid: 284 & ff.)	lvkTO	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lavukaleve	Presentative (Ibid: 203-211)	lvkTR	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Lavukaleve	Exclamative (Ibid: 200)	lvkXO	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lezgian	Mirative (Haspelmath 1993: 243)	lezMP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lezgian	Existential (Ibid: 256)	lezTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lezgian	Weather (Ibid: 314)	lezTW	N	N	Y	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lezgian	Exclamative 3 (Ibid: 313)	lezXG	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M

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Lezgian	Exclamative (Ibid: 244)	lezXP	N	N	Y	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Lezgian	Exclamative 2 (Ibid: 431)	lezXQ	N	N	Y	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Manambu	Physical (Aikhenvald 2008: 85)	mleTB	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Manambu	Existential (Ibid: 81-86)	mleTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Manambu	First sentence (Ibid: 628)	mleTO	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Manambu	Presentative (Ibid: 527)	mleTR	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Manambu	Weather (Ibid: 85)	mleTW	N	N	Y	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Manambu	Weather 2 (Ibid: 89)	mleTW2	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Manambu	Exclamative 2 (Ibid: 265)	mleXC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Manambu	Exclamative Y (Ibid: 227)	mleXO	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mangarrayi	Phys. Sens. (Merlan 1989: 60)	mpcTB	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mangarrayi	Existential (Ibid: 115)	mpcTE	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Mangarayi	Weather (Ibid: 144)	mpcTW	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mangarayi	Exclamative (Ibid: 167)	mpcXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	M	M	M
Mapuche	Existential (Smeets 2008: 125)	arnTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mapuche	Weather (Ibid: 124)	arnTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mapuche	Exclamative/Mirative (Ibid: 110)	arnXM	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mbay	Mirative (Keegan 1997: 138)	mybMP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	M	M	M
Mbay	Existential (Ibid: 76)	mybTE	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Mbay	Presentative (Ibid: 76)	mybTR	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Mbay	Weather (Ibid: 62)	mybTW	Y	N	N	N	Y	N	N	N	Y	M	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mbay	Exclamatives 2 (Ibid: 151)	mybXA	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mbay	Ideophones (Ibid: 141)	mybXS	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	M	M	M
Mongsen Ao	Corporeal property (Coupe 2007: 374)	njoTB	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mongsen Ao	Existentials (Ibid: 376)	njoTE	N	Y	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mongsen Ao	Exclamative 2 (Ibid: 143)	njoXP	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	M	M	M
Mongsen Ao	Exclamative (Ibid: 141)	njoXQ	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N

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Mosetén	Existential (Sakel 2004: 247)	casTE	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Mosetén	Exclamatives (Ibid: 155)	casXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	M	M	M
Musqueam	Existential (Suttles 2004: 62)	hurTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Musqueam	Existential 2 (Ibid: 85)	hurTEA	N	N	Y	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Musqueam	Presentative / thetic (Ibid: 364)	hurTR	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Musqueam	Thetic (Ibid: 99)	hurTZ	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	M	M	M
Musqueam	Exclamative (Ibid: 468)	hurXK	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	M	M	M
Musqueam	Exclamative, thetic (Ibid: 387)	hurXTP	Y	N	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ngiyambaa	Mirative (Donaldson 1980: 258)	wybMP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ngiyambaa	Existential (Ibid: 108)	wybTE1	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ngiyambaa	Existential 2 (Ibid: 233)	wybTE2	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ngiyambaa	Existential 3 (Ibid: 233)	wybTE3	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ngiyambaa	Presentative (Ibid: 138)	wybTR	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Ngiyambaa	Weather (Ibid: 162, 185)	wybTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ngiyambaa	Exclamative Y (Ibid: 242)	wybXP	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Ngiyambaa	Exclamative 2 (Ibid: 329)	wybXS	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	M	M	M
Nivkh	Mirative (Gruzdeva 1998: 44)	nivMC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Nivkh	Weather & Phys. Pain (Ibid: 41)	nivTB	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Nivkh	Existential (Ibid: 26)	nivTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Nivkh	Nature Phenom. (Ibid: 41)	nivTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Oksapmin	Existential 2 (Loughnane 2009: 191)	opmTEO	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Oksapmin	Existential (Ibid: 167)	opmTEU	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	M	M	M
Oksapmin	First sentence (Ibid: 121-22)	opmTRD	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Oksapmin	1st sentence 2 (Ibid: 208)	opmTRO	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Oksapmin	Thetic (Ibid: 168)	opmTU	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	M	M	M
Oksapmin	Exclamative (Ibid: 195, 401)	opmXQ	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Oksapmin	Exclamative 2 (Ibid: 173)	opmXS	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	Y	N	N	M	M	M

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Puinave	Mirative (Girón Higuita 2008: 284)	puiMP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Puinave	Existential (Ibid: 377)	puiTE	N	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Puinave	Thetic (Ibid: 148)	puiTN	N	Y	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Puinave	Weather (Ibid: 379)	puiTW	N	N	N	Y	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Puinave	Exclamative (Ibid: 290)	puiXC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Puinave	Exclamative 2 (Ibid: 306)	puiXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	M	M	M
Purépecha	Weather (Chamereau 2000: 159)	tszTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Purépecha	Excl-thet (Ibid: 92, 113, 193, 242, 284)	tszXTC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Qiang	Mirative (LaPolla & Huang 2003: 200-02)	qxsMC	N	N	N	Y	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Qiang	Physical Pain (Ibid: 73)	qxsTB	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Qiang	Existential (Ibid: 133)	qxsTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Qiang	Weather (Ibid: 75)	qxsTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Russian	Thetic SV (Maslova 1995: 108)	rusTI	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y
Russian	Thetic VS (Ibid 109 & ff.)	rusTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
Russian	Part. & Dem. Excl. (Wade & Gillespie 2011: 505)	rusXD	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Russian	Particle Excl. (Ibid: 505)	rusXP	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Russian	Interrog. excl. (Ibid: 149, 225)	rusXQ	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Russian	Split Exclamatives (Ibid: 531)	rusXV	N	N	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sabanê	Existential (Araujo 2004: 188)	saeTE	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sabanê	Thetic (Ibid: 196)	saeTP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sabanê	Weather (Ibid: 157)	saeTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sabanê	Exclamative (Ibid: 96)	saeXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	M	M	M
Semelai	Mirative-thetic (Kruspe 2004: 281-90)	szaMTC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Semelai	Existential (Ibid: 274)	szaTE	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Semelai	Presentative (Ibid: 196)	szaTR	Y	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M
Semelai	Exclamative 3 (Ibid: 225)	szaXC	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Semelai	Exclamative 2 (Ibid: 184)	szaXQ	N	N	N	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	M	M	M

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Semelai	Exclamative (Ibid: 149)	szaXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Semelai	Intensifier (Ibid: 311)	szaXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Sheko	Thetic (Hellenthal 2010: 148)	sheTA	N	N	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sheko	Existentials (Ibd: 327)	sheTE	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sheko	Thetic 2 (Ibid: 434)	sheTV	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sheko	Weather (Ibid: 152)	sheTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sheko	Exclamative (Ibid: 216)	sheXA	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
Sierra Popoluca	Existential (de Jong Boudreault 2009: 263)	poiTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sierra Popoluca	Presentative (Ibid: 269)	poiTR	N	N	Y	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Sierra Popoluca	Exclamative (Ibid: 238)	poiXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Slave	Mirative (Rice 1989: 400)	denMP	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Slave	Existential (Ibid: 266)	denTE	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Slave	Exclamatives (Ibid: 358 & ff.)	denXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Sochiapan Chinantec	Physical pain (Foris 2000: 179)	csoTB	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sochiapan Chinantec	Existential (Ibid: 133)	csoTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Sochiapan Chinantec	Presentative (Ibid: 193)	csoTR	N	N	Y	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Sochiapan Chinantec	Exclamative/thetic/mir (Ibid: 274, 373)	csoXTM	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Somali	Thetic 2 (Tosco 2002)	somTP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Somali	Presentative (Saeed 1999: 189)	somTR	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Somali	Thetic (Ibid: 231, 241)	somTU	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	M	M	M
Somali	Weather (Tosco 2002: 32)	somTW	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	M	M	M
Somali	Excl. (Saeed 1999: 155)	somXN	N	N	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N
Supyire	Thetic (Carlson 1994: 479)	sppTD	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Supyire	Existential (Ibid: 247)	sppTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Supyire	Presentative (Ibid: 241)	sppTR	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	M	M	M
Supyire	Exclamatives (Ibid: 196)	sppXD	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Tagalog	Existential (Kroeger 1993: 48)	tglTE	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M

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Tagalog	Thetic (Ibid: 48)	tglTG	N	N	N	Y	N	Y	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	M	M	M
Tagalog	Weather (Ibid: 49)	tglTW	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Tagalog	Exclamative 2 (Kaufman 2011)	tglXG	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Tagalog	Exclamative Y (Ibid: 725)	tglXP	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Tariana	Mirative 2 (Aikhenvald 2003: 396)	taeMP	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Tariana	Exst/prs/th/mir (Ibid: 250, 294, 491)	taeMT	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Tariana	Phys. Sensation (Ibid: 241)	taeTB	N	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Tariana	Existential (Ibid: 180)	taeTE	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Tariana	Weather (Ibid: 399)	taeTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Tariana	Exclamative/Mirative (Ibid: 506)	taeXMI	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Tariana	Exclamative 2 (Ibid: 439)	taeXN	N	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Tariana	Exclamative (Ibid: 368)	taeXP1	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	M	M	M
Tariana	Exclamative 3 (Ibid: 368, 551)	taeXP2	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Teiwa	Existential (Klamer 2010: 231)	tweTE	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Teiwa	1st sentence (Ibid: 399)	tweTO	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Teiwa	Presentative (Ibid: 235)	tweTR	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Teiwa	Weather (Ibid: 156)	tweTW	N	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Teiwa	Exclamatives (Ibid: 243)	tweXG	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Tiriyó (Trio)	Mirative (Meira 1999: 462)	triMP	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Tiriyó (Trio)	Existential (Ibid: 478, 544)	triTE	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Trumai	Existential (Guirardello 1999: 210)	tpyTE	Y	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Trumai	Thetic (Ibid: 338)	tpyTP	N	N	N	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	M	M	M
Trumai	Weather (Ibid: 215)	tpyTW	Y	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Trumai	Exclamative (Ibid: 102)	tpyXP	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Turkish	Mirative (Kornfilt 1997: 208)	turML	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	M	M	M
Turkish	Exist. & Thet. (Göksel & Kerslake 2005: 122, 390)	turTE	N	Y	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Turkish	Weather (Ibid: 388)	turTW	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M

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Turkish	Exclamative redupl. (Ibid: 101)	turXP	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	M	M	M
Turkish	Wh- exclamative (Ibid: 137)	turXQ	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
Turkish	Exclamative (Ibid: 112)	turXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	Y	N
Udihe	Mirative (Nikolaeva & Tolskaya 2001: 462)	udeMP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Udihe	Pain, sickness (Ibid: 326)	udeTB1	N	Y	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Udihe	Hungry, thirsty (Ibid: 509)	udeTB2	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Udihe	Thetic (Ibid: 255)	udeTC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Udihe	Existentials (Ibid: 391, 486, 617)	udeTEO	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Udihe	Existential 2 (Ibid: 396)	udeTES	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	M	M	M
Udihe	Presentative (Ibid: 462)	udeTR	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Udihe	Weather (Ibid: 509)	udeTW1	N	N	N	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Udihe	Weather 2 (Ibid: 615)	udeTW2	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Udihe	Exclamative 2 (Ibid: 459)	udeXP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
Udihe	Exclamative (Ibid: 444)	udeXQ	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	Y	N	N	M	M	M
Udihe	Presen.- thetic-Excl. (Ibid: 468, 844)	udeXTP	N	N	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
West Greenlandic	Mirative 2 (Fortescue 1984: 31)	kalMC	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
West Greenlandic	Mirative (30)	kalMP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
West Greenlandic	Existential/thetic (81)	kalTE	N	Y	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	M
West Greenlandic	Thetic (Ibid: 31)	kalTL	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	N
West Greenlandic	Exclamative 2 (Ibid: 30)	kalXP	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
West Greenlandic	Exclamative 4 (Ibid: 201)	kalXQ	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	M	M	M
West Greenlandic	Exclamative 3 (Ibid: 31)	kalXS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	N
West Greenlandic	Exclamatives (Ibid: 30)	kalXZ	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	Y	N

APPENDIX C: ONE-DIMENSIONAL RANKING FOR THE FIRST MDS ANALYSIS

The following table shows the one-dimensional ranking for the first MDS analysis. Only the identification code (LgCx) for each construction is given (see Appendix 2). For a detailed explanation of the values in the table, the reader is referred to Poole (2005).

LgCx	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
itzXS	1.5	2	1	1	14	0.019	-0.7437437	0.021601701
opmXS	1.5	3	0	1	14	0.019	-0.7437437	0.021601701
cavXS	5	3	0	0	15	0.017	-0.7432264	0.016936445
kwiXS	5	3	0	0	15	0.017	-0.7432264	0.016936445
laoXS1	5	3	0	0	15	0.017	-0.7432264	0.016936445
thdXS	5	3	0	0	15	0.016	-0.7432264	0.016936445
udeTES	5	3	0	0	15	0.017	-0.7432264	0.016936445
njoXP	8.5	4	0	0	14	0.072	-0.7363779	-4.57228E-17
turXP	8.5	4	0	0	14	0.155	-0.7363779	-4.57228E-17
ardXP	14.5	4	0	0	17	0.141	-0.7259429	-4.50774E-17
hboTE	14.5	3	0	0	15	0.145	-0.7259429	-4.50774E-17
hurXTP	14.5	3	0	0	15	0.145	-0.7259429	-4.50774E-17
imnXP	14.5	3	0	0	15	0.137	-0.7259429	-4.50774E-17
jaaXP	14.5	3	0	0	15	0.134	-0.7259429	-4.50774E-17
rusXP	14.5	3	0	0	15	0.127	-0.7259429	-4.50774E-17
tglTE	14.5	3	0	0	15	0.144	-0.7259429	-4.50774E-17
triTE	14.5	3	0	0	15	0.138	-0.7259429	-4.50774E-17
xwaTE1	14.5	3	0	0	15	0.148	-0.7259429	-4.50774E-17
xwaTW	14.5	3	0	0	15	0.149	-0.7259429	-4.50774E-17
itzXP	22.5	2	1	1	14	0.092	-0.6717192	-0.080973479
mybTR	22.5	3	0	1	14	0.096	-0.6717192	-0.080973479
rusXD	22.5	3	0	1	14	0.103	-0.6717192	-0.080973479
tglXP	22.5	3	0	1	14	0.104	-0.6717192	-0.080973479
tpyTE	22.5	2	1	1	14	0.101	-0.6717192	-0.080973479
tpyTW	22.5	2	1	1	14	0.103	-0.6717192	-0.080973479
mybTW	26	2	0	1	14	0.175	-0.6686026	-0.029436341
arnXM	46.5	2	0	1	15	0.137	-0.6670932	0.017148994
arpTE	46.5	2	0	1	15	0.145	-0.6670932	0.017148994
arpTRD	46.5	2	0	1	15	0.15	-0.6670932	0.017148994
arpXQ	46.5	2	0	1	15	0.141	-0.6670932	0.017148994
cavTR	46.5	2	0	1	15	0.146	-0.6670932	0.017148994
eusXG	46.5	2	0	1	15	0.152	-0.6670932	0.017148994
fonTR	46.5	2	0	1	15	0.133	-0.6670932	0.017148994
gniTR	46.5	2	0	1	15	0.154	-0.6670932	0.017148994
gupXG	46.5	2	0	1	15	0.146	-0.6670932	0.017148994
gupXN	46.5	2	0	1	15	0.155	-0.6670932	0.017148994
hauXC	46.5	1	1	2	14	0.154	-0.6670932	0.017148994

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LgCx	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
hauXL	46.5	2	0	1	15	0.142	-0.6670932	0.017148994
hboTR	46.5	2	0	1	15	0.127	-0.6670932	0.017148994
itzTR1	46.5	2	0	1	15	0.154	-0.6670932	0.017148994
jpnXG	46.5	2	0	1	15	0.146	-0.6670932	0.017148994
jpnXL	46.5	2	0	1	15	0.155	-0.6670932	0.017148994
kalTL	46.5	3	0	1	17	0.145	-0.6670932	0.017148994
ketXQ	46.5	2	0	1	15	0.144	-0.6670932	0.017148994
kioXQ	46.5	2	0	1	15	0.154	-0.6670932	0.017148994
lvkTR	46.5	2	0	2	14	0.147	-0.6670932	0.017148994
mleTR	46.5	2	0	1	15	0.148	-0.6670932	0.017148994
mtoTE2	46.5	2	0	1	15	0.147	-0.6670932	0.017148994
mtoXD	46.5	2	0	1	15	0.139	-0.6670932	0.017148994
opmTEU	46.5	2	0	1	15	0.15	-0.6670932	0.017148994
opmXQ	46.5	2	0	1	15	0.154	-0.6670932	0.017148994
somTR	46.5	2	0	1	15	0.127	-0.6670932	0.017148994
sppTD	46.5	2	0	1	15	0.153	-0.6670932	0.017148994
sppTR	46.5	2	0	1	15	0.142	-0.6670932	0.017148994
szaTR	46.5	2	0	1	15	0.151	-0.6670932	0.017148994
szaXC	46.5	2	0	1	15	0.127	-0.6670932	0.017148994
tglXG	46.5	2	0	1	15	0.154	-0.6670932	0.017148994
thdXQ	46.5	2	0	2	14	0.152	-0.6670932	0.017148994
tweTR	46.5	2	0	1	15	0.131	-0.6670932	0.017148994
tweXG	46.5	2	0	1	15	0.14	-0.6670932	0.017148994
udeXQ	46.5	2	0	2	14	0.138	-0.6670932	0.017148994
wybTR	46.5	2	0	1	15	0.148	-0.6670932	0.017148994
xuuTD	46.5	2	0	1	15	0.129	-0.6670932	0.017148994
xwaXC3	46.5	2	0	1	15	0.144	-0.6670932	0.017148994
yuxTE	46.5	2	0	1	15	0.131	-0.6670932	0.017148994
yuxTR	46.5	2	0	1	15	0.133	-0.6670932	0.017148994
eusXY	69	2	0	0	16	0.159	-0.6643789	-4.12607E-17
hurTZ	69	2	0	0	16	0.159	-0.6643789	-4.12607E-17
hurXK	69	2	0	0	16	0.153	-0.6643789	-4.12607E-17
jpnXZ	69	2	0	0	16	0.16	-0.6643789	-4.12607E-17
kalXZ	69	3	0	0	18	0.155	-0.6643789	-4.12607E-17
kalXQ	72	4	1	0	13	0.012	-0.6424773	-0.245351147
haiXS1	73.5	5	1	0	15	0.014	-0.6424095	-0.245352995
haiXS2	73.5	5	1	0	15	0.014	-0.6424095	-0.245352995
eusXP	77	2	0	1	15	0.132	-0.5933004	-0.171310162
jpnTE	77	2	0	1	15	0.137	-0.5933004	-0.171310162
lajXQ	77	2	0	2	14	0.14	-0.5933004	-0.171310162
lezXP	77	2	0	1	15	0.142	-0.5933004	-0.171310162
xwaTE2	77	2	0	1	15	0.134	-0.5933004	-0.171310162
hunXY	80	4	2	0	12	0.258	-0.3979257	-0.49660147
kioTR	81	4	1	0	13	0.054	-0.3697272	-0.512069521
sheXA	82	3	1	1	13	0.149	-0.3293432	-0.536723551
mybMP	83	4	0	0	14	0.044	-0.2608129	-0.583611947

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LgCx	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
lezXG	84	3	1	0	14	0.052	-0.2496523	0.694301555
turXS	85	4	1	1	15	0.037	-0.2377035	-0.599436778
haiXQ2	86	4	1	1	15	0.034	-0.2377035	-0.599436778
aatXQ	96.5	2	0	2	14	0.474	-0.2014235	0.438522827
bapXS	96.5	2	0	1	15	0.465	-0.2014235	0.438522827
csoTR	96.5	2	0	1	15	0.468	-0.2014235	0.438522827
engXS	96.5	3	0	1	17	0.451	-0.2014235	0.438522827
eusXA2	96.5	2	0	1	15	0.457	-0.2014235	0.438522827
eusXD	96.5	2	0	1	15	0.458	-0.2014235	0.438522827
fraTA2	96.5	3	0	1	17	0.474	-0.2014235	0.438522827
gupTE	96.5	2	0	1	15	0.472	-0.2014235	0.438522827
hurTEA	96.5	2	0	1	15	0.41	-0.2014235	0.438522827
itzTR2	96.5	2	0	1	15	0.424	-0.2014235	0.438522827
kioTE	96.5	2	0	1	15	0.458	-0.2014235	0.438522827
lezXQ	96.5	2	0	1	15	0.384	-0.2014235	0.438522827
mybTE	96.5	2	0	1	15	0.431	-0.2014235	0.438522827
njoXQ	96.5	3	0	1	17	0.456	-0.2014235	0.438522827
poiTR	96.5	2	0	1	15	0.472	-0.2014235	0.438522827
sheTA	96.5	2	0	1	15	0.424	-0.2014235	0.438522827
sheTE	96.5	2	0	1	15	0.468	-0.2014235	0.438522827
somXN	96.5	3	0	2	16	0.449	-0.2014235	0.438522827
sppXD	96.5	2	0	1	15	0.466	-0.2014235	0.438522827
wybXS	96.5	2	0	1	15	0.464	-0.2014235	0.438522827
fraTA1	109.5	2	0	2	17	0.434	-0.1996537	0.098391488
kalTE	109.5	1	0	2	15	0.435	-0.1996537	0.098391488
sesTR3	109.5	2	0	2	17	0.444	-0.1996537	0.098391488
udeTB1	109.5	1	0	2	15	0.448	-0.1996537	0.098391488
xuuTR	109.5	1	0	2	15	0.458	-0.1996537	0.098391488
xuuXS	109.5	2	0	2	17	0.41	-0.1996537	0.098391488
croTE	113	2	1	1	14	0.265	-0.1907324	0.632428825
fraTR	114	4	0	1	16	0.501	-0.1596739	-0.486515953
hunXA	115	3	0	1	16	0.471	-0.1592441	-0.247287864
udeXTP	116	2	1	1	14	0.501	-0.1573126	-0.490431484
bapMP	119	3	0	1	14	0.501	-0.1546802	-0.488510094
bapTP	119	3	0	1	14	0.501	-0.1546802	-0.488510094
jpnXP	119	3	0	1	14	0.501	-0.1546802	-0.488510094
qxsMC	119	3	0	1	14	0.501	-0.1546802	-0.488510094
xwaXP	119	3	0	1	14	0.501	-0.1546802	-0.488510094
agrMT	131.5	3	0	1	17	0.378	-0.0879987	-0.141703731
capMC	131.5	3	0	1	17	0.367	-0.0879987	-0.141703731
capTC	131.5	3	0	1	17	0.375	-0.0879987	-0.141703731
ckuXA	131.5	3	0	1	17	0.354	-0.0879987	-0.141703731
engXQ	131.5	3	0	1	17	0.356	-0.0879987	-0.141703731
fraTA3	131.5	3	0	1	17	0.375	-0.0879987	-0.141703731
fraTA4	131.5	3	0	1	17	0.37	-0.0879987	-0.141703731
fraTB	131.5	3	0	1	17	0.355	-0.0879987	-0.141703731

LgCx	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
fraXL	131.5	3	0	1	17	0.373	-0.0879987	-0.141703731
fraXQ	131.5	3	0	1	17	0.375	-0.0879987	-0.141703731
haiMQ	131.5	3	0	1	17	0.372	-0.0879987	-0.141703731
haiMTL	131.5	3	0	1	17	0.377	-0.0879987	-0.141703731
haiXL1	131.5	3	0	1	17	0.373	-0.0879987	-0.141703731
haiXL2	131.5	3	0	1	17	0.357	-0.0879987	-0.141703731
haiXL3	131.5	3	0	1	17	0.348	-0.0879987	-0.141703731
haiXQ1	131.5	3	0	1	17	0.366	-0.0879987	-0.141703731
haiXY	131.5	3	0	1	17	0.377	-0.0879987	-0.141703731
hunXQ	131.5	3	0	1	17	0.36	-0.0879987	-0.141703731
kalXS	131.5	3	0	1	17	0.374	-0.0879987	-0.141703731
laoXS2	131.5	3	0	1	17	0.348	-0.0879987	-0.141703731
agrTL	175	2	0	1	15	0.501	-0.0444011	-0.174082373
apnXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
bapXQ	175	2	0	2	14	0.501	-0.0444011	-0.174082373
casXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
ckuXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
croMT	175	2	0	2	14	0.501	-0.0444011	-0.174082373
denXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
dihTR	175	2	0	1	15	0.501	-0.0444011	-0.174082373
dihXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
dowXA	175	2	0	2	14	0.501	-0.0444011	-0.174082373
emeMQ	175	2	0	1	15	0.501	-0.0444011	-0.174082373
eusXA1	175	2	0	1	15	0.501	-0.0444011	-0.174082373
eusXQ	175	2	0	1	15	0.501	-0.0444011	-0.174082373
fonXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
fraXS1	175	2	0	1	15	0.501	-0.0444011	-0.174082373
fraXS2	175	2	0	1	15	0.501	-0.0444011	-0.174082373
gupTB	175	2	0	1	15	0.501	-0.0444011	-0.174082373
gupTN	175	2	0	1	15	0.501	-0.0444011	-0.174082373
haiTU	175	2	0	1	15	0.501	-0.0444011	-0.174082373
hboXQ	175	2	0	1	15	0.501	-0.0444011	-0.174082373
hurTR	175	2	0	1	15	0.501	-0.0444011	-0.174082373
jaaMC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
jaaXC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
jaaXTC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
kalMC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
kkkXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
kssXQ	175	2	0	1	15	0.501	-0.0444011	-0.174082373
kssXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
laoXY	175	2	0	1	15	0.501	-0.0444011	-0.174082373
lvkMC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
lvkTE	175	2	0	1	15	0.501	-0.0444011	-0.174082373
mleXC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
mpcTE	175	2	0	1	15	0.501	-0.0444011	-0.174082373
mpcXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373

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LgCx	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
mtoTD	175	2	0	1	15	0.501	-0.0444011	-0.174082373
mtoTE1	175	2	0	1	15	0.501	-0.0444011	-0.174082373
mybXA	175	2	0	1	15	0.501	-0.0444011	-0.174082373
mybXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
nivMC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
opmTRD	175	2	0	1	15	0.501	-0.0444011	-0.174082373
opmTU	175	2	0	1	15	0.501	-0.0444011	-0.174082373
poiXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
puiTN	175	2	0	2	14	0.501	-0.0444011	-0.174082373
puiXC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
puiXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
qxsTB	175	2	0	1	15	0.501	-0.0444011	-0.174082373
rusXQ	175	2	0	1	15	0.501	-0.0444011	-0.174082373
saeXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
sesTR2	175	2	0	1	15	0.501	-0.0444011	-0.174082373
sesTU	175	2	0	1	15	0.501	-0.0444011	-0.174082373
sesXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
somTU	175	2	0	1	15	0.501	-0.0444011	-0.174082373
somTW	175	2	0	1	15	0.501	-0.0444011	-0.174082373
szaMTC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
szaXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
szaXS	175	2	0	1	15	0.501	-0.0444011	-0.174082373
taeTB	175	2	0	2	14	0.501	-0.0444011	-0.174082373
taeXN	175	2	0	2	14	0.501	-0.0444011	-0.174082373
thdMC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
tszXTC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
turML	175	2	0	1	15	0.501	-0.0444011	-0.174082373
udeTC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
xwaXC1	175	2	0	2	14	0.501	-0.0444011	-0.174082373
xwaXC2	175	2	0	1	15	0.501	-0.0444011	-0.174082373
xwaXMC	175	2	0	1	15	0.501	-0.0444011	-0.174082373
yuxTU	175	2	0	1	15	0.501	-0.0444011	-0.174082373
yuxXQ	175	2	0	1	15	0.501	-0.0444011	-0.174082373
arnTE	222.5	3	0	0	15	0.145	0.0080859	0.454695331
arpTE	222.5	3	0	0	15	0.148	0.0080859	0.454695331
csoTE	222.5	3	0	0	15	0.148	0.0080859	0.454695331
dowTE	222.5	3	0	0	15	0.135	0.0080859	0.454695331
eusTW1	222.5	3	0	0	15	0.131	0.0080859	0.454695331
gniTE	222.5	3	0	0	15	0.146	0.0080859	0.454695331
hurTE	222.5	3	0	0	15	0.148	0.0080859	0.454695331
jaaTE	222.5	3	0	0	15	0.148	0.0080859	0.454695331
jaaTW	222.5	3	0	0	15	0.146	0.0080859	0.454695331
kanTE	222.5	3	0	0	15	0.144	0.0080859	0.454695331
kwiTE2	222.5	3	0	0	15	0.147	0.0080859	0.454695331
lezTE	222.5	3	0	0	15	0.144	0.0080859	0.454695331
mleTB	222.5	3	0	0	15	0.136	0.0080859	0.454695331

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LgCx	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
mleTE	222.5	3	0	0	15	0.146	0.0080859	0.454695331
mpcTW	222.5	3	0	0	15	0.147	0.0080859	0.454695331
nivTE	222.5	3	0	0	15	0.145	0.0080859	0.454695331
opmTEO	222.5	3	0	0	15	0.137	0.0080859	0.454695331
opmTRO	222.5	3	0	0	15	0.142	0.0080859	0.454695331
poiTE	222.5	3	0	0	15	0.142	0.0080859	0.454695331
sppTE	222.5	3	0	0	15	0.134	0.0080859	0.454695331
tweTE	222.5	3	0	0	15	0.148	0.0080859	0.454695331
tweTO	222.5	3	0	0	15	0.148	0.0080859	0.454695331
udeTEO	222.5	3	0	0	15	0.148	0.0080859	0.454695331
udeTR	222.5	3	0	0	15	0.148	0.0080859	0.454695331
udeTW2	222.5	3	0	0	15	0.147	0.0080859	0.454695331
wybTE2	222.5	3	0	0	15	0.148	0.0080859	0.454695331
xuuTE	222.5	3	0	0	15	0.14	0.0080859	0.454695331
yuxTO	222.5	3	0	0	15	0.136	0.0080859	0.454695331
arpMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
cavXM	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
croXP	253.5	4	0	0	17	0.501	0.0728778	-0.494506448
csoXTM	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
cupMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
denMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
fonMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
gniMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
haiMTP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
hunXP	253.5	4	0	0	17	0.501	0.0728778	-0.494506448
jaaTP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
jpnTP	253.5	4	0	0	17	0.501	0.0728778	-0.494506448
kalMP	253.5	4	0	0	17	0.501	0.0728778	-0.494506448
kalXP	253.5	4	0	0	17	0.501	0.0728778	-0.494506448
ketTP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
kioMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
kwoXP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
lezMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
mtoMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
puiMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
saeTP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
sesTR1	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
somTP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
taeMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
taeXP1	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
taeXP2	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
thdTP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
tpyXP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
triMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
udeMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
udeXP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947

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LgCx	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
wybMP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
wybXP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
xwaTP	253.5	3	0	0	15	0.501	0.0728778	-0.583611947
eusXF	271	3	0	0	18	0.501	0.0728778	4.5272E-18
lezTW	272.5	2	1	1	14	0.093	0.0812007	0.396430395
mleTW	272.5	2	1	1	14	0.092	0.0812007	0.396430395
puiTE	274	2	1	1	14	0.125	0.1748343	0.389245034
laoTE	275	2	2	1	13	0.501	0.1752847	0.940547702
kanXQ	276	2	2	1	13	0.501	0.1896086	0.866371475
engXO	277.5	3	0	1	17	0.179	0.1955246	0.244256717
taeXMI	277.5	3	0	1	17	0.181	0.1955246	0.244256717
turTE	279	4	0	0	17	0.086	0.2067502	0.370405488
ckuTE	280	4	0	0	17	0.13	0.2067502	1.28381E-17
apnTE	288	2	0	1	15	0.196	0.2090177	0.23485339
ardTEO	288	2	0	1	15	0.197	0.2090177	0.23485339
casTE	288	2	0	1	15	0.196	0.2090177	0.23485339
croTR	288	2	0	1	15	0.198	0.2090177	0.23485339
denTE	288	2	0	1	15	0.196	0.2090177	0.23485339
emeTEO	288	2	0	1	15	0.196	0.2090177	0.23485339
gniTEO	288	2	0	1	15	0.192	0.2090177	0.23485339
itzTEO	288	2	0	1	15	0.197	0.2090177	0.23485339
mleTO	288	2	0	1	15	0.186	0.2090177	0.23485339
mleXO	288	2	0	1	15	0.187	0.2090177	0.23485339
saeTE	288	2	0	1	15	0.195	0.2090177	0.23485339
taeTE	288	2	0	1	15	0.184	0.2090177	0.23485339
thdTE	288	2	0	1	15	0.195	0.2090177	0.23485339
turTW	288	2	0	1	15	0.195	0.2090177	0.23485339
wybTE1	288	2	0	1	15	0.193	0.2090177	0.23485339
aatTI	298	3	0	1	17	0.085	0.2133385	-0.010468022
engTI	298	3	0	1	17	0.139	0.2133385	-0.010468022
engXI	298	3	0	1	17	0.104	0.2133385	-0.010468022
haiTB	298	3	0	1	17	0.142	0.2133385	-0.010468022
rusTI	298	3	0	1	17	0.028	0.2133385	-0.010468022
eusTE	301.5	3	1	0	14	0.501	0.2721087	0.441283016
rusXV	301.5	3	1	0	14	0.501	0.2721087	0.441283016
agrTE	310.5	3	0	0	15	0.15	0.2791146	0.322664615
arpMTR	310.5	3	0	0	15	0.144	0.2791146	0.322664615
arpTR	310.5	3	0	0	15	0.153	0.2791146	0.322664615
cavTE	310.5	3	0	0	15	0.149	0.2791146	0.322664615
cupTE	310.5	3	0	0	15	0.151	0.2791146	0.322664615
fonTE1	310.5	3	0	0	15	0.137	0.2791146	0.322664615
itzTE	310.5	3	0	0	15	0.151	0.2791146	0.322664615
kkkTE	310.5	3	0	0	15	0.145	0.2791146	0.322664615
kssTE	310.5	3	0	0	15	0.148	0.2791146	0.322664615
kssTW	310.5	3	0	0	15	0.14	0.2791146	0.322664615
kwiTE1	310.5	3	0	0	15	0.141	0.2791146	0.322664615

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LgCx	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
lajTE	310.5	3	0	0	15	0.15	0.2791146	0.322664615
njoTE	310.5	3	0	0	15	0.14	0.2791146	0.322664615
qxsTE	310.5	3	0	0	15	0.138	0.2791146	0.322664615
sesTE	310.5	3	0	0	15	0.141	0.2791146	0.322664615
taeMT	310.5	3	0	0	15	0.152	0.2791146	0.322664615
ardTE	331	3	0	0	15	0.501	0.2791146	1.73337E-17
capTE	331	3	0	0	15	0.501	0.2791146	1.73337E-17
csoTB	331	3	0	0	15	0.414	0.2791146	1.73337E-17
eusTW2	331	3	0	0	15	0.501	0.2791146	1.73337E-17
fonTB	331	3	0	0	15	0.501	0.2791146	1.73337E-17
fonTW	331	3	0	0	15	0.377	0.2791146	1.73337E-17
haiTE	331	3	0	0	15	0.501	0.2791146	1.73337E-17
imnTB	331	3	0	0	15	0.45	0.2791146	1.73337E-17
imnTE	331	3	0	0	15	0.501	0.2791146	1.73337E-17
imnTW	331	3	0	0	15	0.423	0.2791146	1.73337E-17
kioTB	331	3	0	0	15	0.501	0.2791146	1.73337E-17
kkiTW	331	3	0	0	15	0.501	0.2791146	1.73337E-17
kkiXO	331	3	0	0	15	0.501	0.2791146	1.73337E-17
kwiTW	331	3	0	0	15	0.362	0.2791146	1.73337E-17
kwoTE	331	3	0	0	15	0.387	0.2791146	1.73337E-17
lajTW	331	3	0	0	15	0.501	0.2791146	1.73337E-17
mleTW2	331	3	0	0	15	0.501	0.2791146	1.73337E-17
nivTB	331	3	0	0	15	0.501	0.2791146	1.73337E-17
njoTB	331	3	0	0	15	0.501	0.2791146	1.73337E-17
qxsTW	331	3	0	0	15	0.42	0.2791146	1.73337E-17
sheTW	331	3	0	0	15	0.501	0.2791146	1.73337E-17
taeTW	331	3	0	0	15	0.476	0.2791146	1.73337E-17
tweTW	331	3	0	0	15	0.501	0.2791146	1.73337E-17
wybTE3	331	3	0	0	15	0.501	0.2791146	1.73337E-17
wybTW	331	3	0	0	15	0.501	0.2791146	1.73337E-17
hauTP	344	4	0	0	17	0.256	0.288382	-0.679405014
hunTI	345	4	0	0	17	0.399	0.288382	1.79143E-17
fraTE	346	4	0	0	17	0.002	0.2961036	0.311237545
engXV1	347	4	1	0	16	0.083	0.2978535	0.495889477
engXV2	348	4	0	0	17	0.084	0.2983077	0.400078544
fraXV	349	3	1	1	16	0.082	0.2995364	0.39088571
turXQ	350	3	0	1	17	0.396	0.3255969	-0.450047923
aatXV	351.5	2	0	1	15	0.101	0.382932	0.256769595
jpnXV	351.5	2	0	1	15	0.097	0.382932	0.256769595
tpyTP	353	4	0	0	14	0.037	0.5163683	-0.825558482
capTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
ckuTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
engTW	362	4	0	0	17	0.501	0.5165252	-0.732056082
fonTE2	362	3	0	0	15	0.501	0.5165252	-0.732056082
fraTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
haiTW	362	3	0	0	15	0.501	0.5165252	-0.732056082

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LgCx	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
ketTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
kkkTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
lvkTO	362	3	0	0	15	0.501	0.5165252	-0.732056082
lvkXO	362	3	0	0	15	0.501	0.5165252	-0.732056082
mpcTB	362	3	0	0	15	0.501	0.5165252	-0.732056082
nivTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
saeTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
tglTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
tszTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
udeTW1	362	3	0	0	15	0.501	0.5165252	-0.732056082
yuxTW	362	3	0	0	15	0.501	0.5165252	-0.732056082
arnTW	373	2	0	1	15	0.005	0.516718	-0.737477507
cupTW	373	2	0	1	15	0.005	0.516718	-0.737477507
puiTW	373	2	0	1	15	0.004	0.516718	-0.737477507
szaXQ	373	2	0	1	15	0.005	0.516718	-0.737477507
udeTB2	373	2	0	1	15	0.005	0.516718	-0.737477507
tglTG	376	3	0	1	14	0.07	0.5213195	-0.77146597
hauXEG	377	2	1	1	14	0.285	0.5590326	0.413758007
aatTV	378	3	1	1	16	0.214	0.6361774	0.090192822
hboTD	379	2	1	1	14	0.229	0.6384259	0.090387383
arpTV	384.5	3	0	0	15	0.316	0.6772753	4.20704E-17
eusTV	384.5	3	0	0	15	0.317	0.6772753	4.20704E-17
hboTV	384.5	3	0	0	15	0.3	0.6772753	4.20704E-17
hunTR	384.5	3	0	0	15	0.31	0.6772753	4.20704E-17
hunTV	384.5	3	0	0	15	0.31	0.6772753	4.20704E-17
itzTV	384.5	3	0	0	15	0.315	0.6772753	4.20704E-17
kanTV	384.5	3	0	0	15	0.315	0.6772753	4.20704E-17
laoTV	384.5	3	0	0	15	0.311	0.6772753	4.20704E-17
rusTV	384.5	4	0	0	17	0.311	0.6772753	4.20704E-17
sheTV	384.5	3	0	0	15	0.31	0.6772753	4.20704E-17
engTE	390.5	4	0	0	17	0.368	0.6772753	0.376870046
hunTE	390.5	4	0	0	17	0.383	0.6772753	0.376870046
hauTE	394	3	0	0	15	0.405	0.6772753	0.452057942
hauTR	394	3	0	0	15	0.403	0.6772753	0.452057942
ketTE	394	3	0	0	15	0.403	0.6772753	0.452057942
kkiTE	394	3	0	0	15	0.405	0.6772753	0.452057942
szaTE	394	3	0	0	15	0.407	0.6772753	0.452057942
emeTE	397	3	1	0	14	0.013	0.7565074	0.344348664

APPENDIX D: TWO-DIMENSIONAL RANKING FOR THE FIRST MDS ANALYSIS

The following table lists the two-dimensional ranking for the first MDS analysis. The constructions are ordered according to their rank. As in the previous table, the constructions are only identified by their codes. For detailed explanations of the values, see Poole (2005).

Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
arpXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
kwiXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
gupXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
itzXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
ketXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
kioXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
thdXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
laoEQ	E	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
mleXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
casPQ	M	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
opmXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
szaXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
poiXQ	X	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
thdXQL	X	15	6	0	0	10	0.501000047	-0.676941898	Y.03E-16
turXLQ	X	15	8	0	0	10	0.501000047	-0.676941898	Y.03E-16
udeXLQ	X	15	6	0	0	10	0.501000047	-0.676941898	Y.03E-16
mleXLZ	X	17	6	2	0	8	0.378000021	-0.654512574	0.117749538
ardXLN	X	30	6	0	0	12	0.014	-0.486020241	6.94E-17
arpEL	E	30	4	0	0	12	0.166000009	-0.486020241	6.94E-17
eusXL	X	30	4	0	0	12	0.048000004	-0.486020241	6.94E-17
hboEL	E	30	4	0	0	12	0.004	-0.486020241	6.94E-17
croEPL	E	30	4	0	0	12	0.012	-0.486020241	6.94E-17
fonPL	P	30	4	0	0	12	0.037	-0.486020241	6.94E-17
hauEL	E	30	4	0	0	12	0.115000002	-0.486020241	6.94E-17
hauPL	P	30	4	0	0	12	0.024	-0.486020241	6.94E-17
hauXEL	X	30	4	0	0	12	0.046000004	-0.486020241	6.94E-17
hauXL	X	30	4	0	0	12	0.013	-0.486020241	6.94E-17
imnXL	X	30	4	0	0	12	0.042000003	-0.486020241	6.94E-17
itzXLN	X	30	6	0	0	12	0.076000005	-0.486020241	6.94E-17
xwaEL	E	30	4	0	0	12	0.032000002	-0.486020241	6.94E-17

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Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
lvkPL	P	30	4	0	0	12	0.023000002	-0.486020241	6.94E-17
arnMXL	M	30	4	0	0	12	0.095000006	-0.486020241	6.94E-17
mybPL	P	30	4	0	0	12	0.059000004	-0.486020241	6.94E-17
casX	X	30	4	0	0	12	0.026000001	-0.486020241	6.94E-17
hurML	M	30	4	0	0	12	0.031000001	-0.486020241	6.94E-17
wybEL	E	30	4	0	0	12	0.005	-0.486020241	6.94E-17
rusXL	X	30	6	0	0	12	0.038000003	-0.486020241	6.94E-17
tglXL	X	30	4	0	0	12	0.020000001	-0.486020241	6.94E-17
triEL	E	30	4	0	0	12	0.018000001	-0.486020241	6.94E-17
triXL	X	30	4	0	0	12	0.016000001	-0.486020241	6.94E-17
tpyEL	E	30	4	0	0	12	0.012	-0.486020241	6.94E-17
udeXLO	X	30	4	0	0	12	0.007	-0.486020241	6.94E-17
szaELI	E	43	4	0	2	10	0.030000001	-0.472257757	-0.009687332
jpnTI	T	44	2	2	0	14	0.501000047	-0.390085039	0.099168443
agrMRL	M	47.5	2	0	2	12	0.501000047	-0.373515874	0.097761248
hauTLI	T	47.5	2	0	2	12	0.501000047	-0.373515874	0.097761248
hunXLI	X	47.5	4	0	2	12	0.501000047	-0.373515874	0.097761248
kwoXLQ	X	47.5	2	0	4	10	0.501000047	-0.373515874	0.097761248
taeMLD	M	47.5	2	0	2	12	0.501000047	-0.373515874	0.097761248
turMR	M	47.5	2	0	2	12	0.501000047	-0.373515874	0.097761248
agrML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
agrMTL	M	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
eusXL	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
hboTPL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
cavMXC	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
capML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
capML2	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
croML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
croXLN	X	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
fonML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
gniML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
haiML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
haiTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
haiXL	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
jaaML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
jaaMXL	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
jaaXL	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
ketMLN	M	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
ketTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
kioML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17

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Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
kioPTL	P	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
kssXS	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
ckuXNL	X	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
kkkXL	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
yuxML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
sesPL	P	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
thdML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
thdTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
xwaML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
xwaXL	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
lvkEL	E	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
lvkTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
lezML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
lezXL	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
myhML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
arnWL	W	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
mybML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
njoML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
wybML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
wybXL	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
nivML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
opmPTL	P	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
opmTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
puiML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
puiXL	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
tszMXL	M	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
qxsML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
saeTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
szaML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
denML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
csoMXL	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
sppTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
triBL	B	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
triML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
tpyTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
udeML	M	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
udeTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
udeXL	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
udeXPT	X	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
kalTL	T	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17

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Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
arpMLZ	M	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
bapMLZ	M	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
fraTLZ	T	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
haiXZL	X	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
jaaXZL	X	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
xwaXLZ	X	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
lvkMLZ	M	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
taeXLZ	X	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
kalEL	E	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
kalMLZ	M	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
kalXLZ	X	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
haiXLQ	X	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
jpnXQL	X	126.5	6	2	0	10	0.501000047	-0.291136362	-0.137601989
kanXIQ	X	126.5	4	2	2	8	0.501000047	-0.291136362	-0.137601989
xwaXIL	X	126.5	4	2	2	8	0.501000047	-0.291136362	-0.137601989
xwaXLQ	X	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
lajXLQ	X	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
wybXQL	X	126.5	4	2	2	8	0.501000047	-0.291136362	-0.137601989
opmXQL	X	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
tpyXQL	X	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
kalXQL	X	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
eusXN	X	133	2	0	2	12	0.080000006	-0.27807258	-0.146373275
szaXZ	X	133	2	0	2	12	0.010000001	-0.27807258	-0.146373275
sheXZ	X	133	2	0	2	12	0.006000001	-0.27807258	-0.146373275
engX	X	135	2	2	0	14	0.016000001	-0.278068875	-0.146375889
taeXN	X	136	4	0	0	14	0.023000002	-0.162803758	-0.227510478
myhE	E	137	2	0	0	14	0.004	-0.161244348	-0.228608174
yuxE	E	138	2	0	0	14	0.010000001	-0.161128808	-0.228689502
xuuE	E	139	2	0	0	14	0.005	-0.160871689	-0.228870486
wybP	P	140	2	0	0	14	0.005	-0.160830834	-0.228899244
udeE	E	141	2	0	0	14	0.007	-0.160719295	-0.228977756
tweX	X	142	2	0	0	14	0.003	-0.160696302	-0.228993941
thdE	E	143	2	0	0	14	0.005	-0.160348096	-0.229239041
sppP	P	144	2	0	0	14	0.002	-0.160251329	-0.229307155
saeE	E	145	2	0	0	14	0.003	-0.159950151	-0.229519152
qxsB	B	146	2	0	0	14	0.006	-0.159841479	-0.229595646
opmE	E	147	2	0	0	14	0.002	-0.159688328	-0.229703448
mleX	X	148	2	0	0	14	0.027000001	-0.159456636	-0.229866535
mleP	P	149	2	0	0	14	0.015000001	-0.159436225	-0.229880902
itzE	E	150	2	0	0	14	0.002	-0.158750687	-0.230363449

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Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
hurE	E	151	2	0	0	14	0.002	-0.158612574	-0.230460666
hauX	X	152	2	0	0	14	0.026000001	-0.158547995	-0.230506123
gniE	E	153	2	0	0	14	0.004	-0.158408111	-0.230604587
emeE	E	154	2	0	0	14	0.003	-0.158028733	-0.230871629
denE	E	155	2	0	0	14	0.002	-0.157920691	-0.23094768
casE	E	156	2	0	0	14	0.003	-0.15781631	-0.231021152
apnE	E	157	2	0	0	14	0.002	-0.157672637	-0.231122284
aatTN	T	159.5	2	0	0	16	0.426000029	-0.020737163	2.79E-18
engTN	T	159.5	2	0	0	16	0.428000033	-0.020737163	2.79E-18
engXN	X	159.5	2	0	0	16	0.427000016	-0.020737163	2.79E-18
ckuXN	X	159.5	2	0	0	16	0.42900002	-0.020737163	2.79E-18
haiMQN	M	164	4	0	0	14	0.007	-0.020737163	-0.327510633
haiXQN	X	164	4	0	0	14	0.029000001	-0.020737163	-0.327510633
njoXQN	X	164	4	0	0	14	0.110000007	-0.020737163	-0.327510633
turXQ	X	164	4	0	0	14	0.003	-0.020737163	-0.327510633
kalXQ	X	164	4	0	0	14	0.025	-0.020737163	-0.327510633
fraPLZ	P	167	4	2	0	12	0.501000047	-0.017206116	0.470324736
triTIM	T	168	4	0	4	8	0.501000047	-0.01720251	0.470319332
dowXZ	X	170.5	2	0	2	14	0.41900003	-0.011794917	-0.016480229
engXR	X	170.5	2	0	2	14	0.438000023	-0.011794917	-0.016480229
fraTZ	T	170.5	2	0	2	14	0.393000007	-0.011794917	-0.016480229
hunXZN	X	170.5	2	0	2	14	0.408000022	-0.011794917	-0.016480229
eusXQZ	X	173	4	0	2	12	0.017000001	-0.010983773	-0.334376005
xwaTL	T	174	4	0	0	12	0.104000002	0.089264056	0.487021651
tpyTEA	T	175	4	0	0	12	0.106000006	0.089287958	0.487058984
tpyBA	B	176	4	0	0	12	0.099000007	0.089300842	0.487079107
tpyWAL	W	177	4	0	0	12	0.106000006	0.08930412	0.487084228
cupWAL	W	178	4	0	0	12	0.106000006	0.089347743	0.487152362
cupMXL	M	179	4	0	0	12	0.102000006	0.089363557	0.487177062
engXQ	X	181	2	2	0	14	0.006	0.099149037	-0.411898044
xuuXQ	X	181	2	2	2	12	0.007	0.099149037	-0.411898044
somXQ	X	181	2	2	2	12	0.004	0.099149037	-0.411898044
bapXQZ	X	184.5	2	0	2	12	0.004	0.09920354	-0.411936464
kssXQZ	X	184.5	2	0	2	12	0.013	0.09920354	-0.411936464
hurXQZ	X	184.5	2	0	2	12	0.005	0.09920354	-0.411936464
turXQZ	X	184.5	2	0	2	12	0.047000002	0.09920354	-0.411936464
apnXQ	X	194	2	0	0	14	0.006	0.100909203	-0.413200486
hboXQ	X	194	2	0	0	14	0.027000001	0.100909203	-0.413200486
emeMQ	M	194	2	0	0	14	0.004	0.100909203	-0.413200486
fonXQ	X	194	2	0	0	14	0.011000001	0.100909203	-0.413200486

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Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
haiXQ	X	194	2	0	0	14	0.013	0.100909203	-0.413200486
dihXQ	X	194	2	0	0	14	0.004	0.100909203	-0.413200486
yuxXQ	X	194	2	0	0	14	0.010000001	0.100909203	-0.413200486
sesXQ	X	194	2	0	0	14	0.006	0.100909203	-0.413200486
lvkXQ	X	194	2	0	0	14	0.041000001	0.100909203	-0.413200486
lezXQ	X	194	2	0	0	12	0.003	0.100909203	-0.413200486
mpcXQ	X	194	2	0	0	14	0.002	0.100909203	-0.413200486
mybXQ	X	194	2	0	0	14	0.013	0.100909203	-0.413200486
puiXQ	X	194	2	0	0	14	0.016000001	0.100909203	-0.413200486
saeXQ	X	194	2	0	0	14	0.009000001	0.100909203	-0.413200486
denXQ	X	194	2	0	0	14	0.008	0.100909203	-0.413200486
aatXQI	X	202	3	0	3	10	0.002	0.101079946	-0.413257326
aatXI	X	204.5	4	2	0	10	0.501000047	0.101132361	-0.413838203
itzPI	P	204.5	4	2	0	10	0.501000047	0.101132361	-0.413838203
somPI	P	204.5	4	2	0	10	0.501000047	0.101132361	-0.413838203
twePI	P	204.5	4	2	0	10	0.501000047	0.101132361	-0.413838203
eusXRZ	X	209.5	0	0	4	12	0.417000026	0.108053635	0.005152722
gniEPT	E	209.5	0	0	2	14	0.423000008	0.108053635	0.005152722
imnER	E	209.5	0	0	2	14	0.414000034	0.108053635	0.005152722
lezXZ	X	209.5	0	0	2	14	0.421000034	0.108053635	0.005152722
sppER	E	209.5	0	0	2	14	0.41200003	0.108053635	0.005152722
triER	E	209.5	0	0	2	14	0.423000008	0.108053635	0.005152722
kioER	E	213.5	0	0	2	14	0.413000017	0.108053635	0.005152722
mybXZ	X	213.5	0	0	2	14	0.423000008	0.108053635	0.005152722
ardER	E	220	0	0	2	14	0.408000022	0.108053635	0.005152722
eusXZ	X	220	0	0	2	14	0.410000026	0.108053635	0.005152722
cupEPR	P	220	0	0	2	14	0.410000026	0.108053635	0.005152722
haiMZ	M	220	0	0	2	14	0.407000005	0.108053635	0.005152722
haiXZ	X	220	0	0	2	14	0.398000032	0.108053635	0.005152722
xuuPR	P	220	0	0	2	14	0.418000013	0.108053635	0.005152722
kssER	E	220	0	0	2	14	0.421000034	0.108053635	0.005152722
lezER	E	220	0	0	2	14	0.407000005	0.108053635	0.005152722
hurEZ	E	220	0	0	4	12	0.423000008	0.108053635	0.005152722
wybER	E	220	0	0	2	14	0.404000014	0.108053635	0.005152722
csoPR	P	220	0	0	2	14	0.404000014	0.108053635	0.005152722
kwiWA	W	241.5	2	0	0	14	0.119000003	0.116687642	0.408517845
capWA	W	241.5	2	0	0	14	0.139000013	0.116687642	0.408517845
fonBA	B	241.5	2	0	0	14	0.138000011	0.116687642	0.408517845
fonWA	W	241.5	2	0	0	14	0.141000003	0.116687642	0.408517845
haiWA	W	241.5	2	0	0	14	0.114000008	0.116687642	0.408517845

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Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
imnBA	B	241.5	2	0	0	14	0.137000009	0.116687642	0.408517845
imnWA	W	241.5	2	0	0	14	0.127000004	0.116687642	0.408517845
kkiWA	W	241.5	2	0	0	14	0.140000001	0.116687642	0.408517845
ketWA	W	241.5	2	0	0	14	0.131000012	0.116687642	0.408517845
kioBA	B	241.5	2	0	0	14	0.125	0.116687642	0.408517845
ckuWA	W	241.5	2	0	0	14	0.124000005	0.116687642	0.408517845
kkkWA	W	241.5	2	0	0	14	0.116000004	0.116687642	0.408517845
thdWA	W	241.5	2	0	0	14	0.128000006	0.116687642	0.408517845
xwaWA	W	241.5	2	0	0	14	0.116000004	0.116687642	0.408517845
lajWA	W	241.5	2	0	0	14	0.123000003	0.116687642	0.408517845
lezWA	W	241.5	2	0	0	14	0.136000007	0.116687642	0.408517845
myhWA	W	241.5	2	0	0	14	0.139000013	0.116687642	0.408517845
mleWA	W	241.5	2	0	0	14	0.138000011	0.116687642	0.408517845
mpcBA	B	241.5	2	0	0	14	0.135000005	0.116687642	0.408517845
mybWA	W	241.5	2	0	0	14	0.129000008	0.116687642	0.408517845
wybWA	W	241.5	2	0	0	14	0.134000003	0.116687642	0.408517845
nivBWA	B	241.5	2	0	0	14	0.131000012	0.116687642	0.408517845
nivWBA	W	241.5	2	0	0	14	0.133000001	0.116687642	0.408517845
puiWA	W	241.5	2	0	0	14	0.140000001	0.116687642	0.408517845
qxsEA	E	241.5	2	0	0	14	0.139000013	0.116687642	0.408517845
qxsWA	W	241.5	2	0	0	14	0.134000003	0.116687642	0.408517845
saeWA	W	241.5	2	0	0	14	0.131999999	0.116687642	0.408517845
csoBA	B	241.5	2	0	0	14	0.131999999	0.116687642	0.408517845
taeWA	W	241.5	2	0	0	14	0.142000005	0.116687642	0.408517845
tweWA	W	241.5	2	0	0	14	0.138000011	0.116687642	0.408517845
turWA	W	241.5	2	0	0	14	0.123000003	0.116687642	0.408517845
udeWA	W	241.5	2	0	0	14	0.138000011	0.116687642	0.408517845
kwiE	E	259	0	0	0	16	0.407000005	0.116687642	-Y.95E-17
kkiX	X	259	0	0	0	16	0.406000018	0.116687642	-Y.95E-17
njoE	E	259	0	0	0	16	0.413000017	0.116687642	-Y.95E-17
arpTI	T	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
eusXN	X	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
hboXI	X	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
gupBI	B	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
itzTI	T	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
kanTI	T	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
kioBI	B	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
yuxTI	T	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
sesTI	T	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
laoPI	P	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254

Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
sheTI	T	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
udePI	P	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
fraXS	X	275	4	0	0	14	0.024	0.121208344	0.406454348
fraXZ	X	275	4	0	0	14	0.020000001	0.121208344	0.406454348
haiBAN	B	275	4	0	0	14	0.020000001	0.121208344	0.406454348
rusTI	T	275	4	0	0	14	0.025	0.121208344	0.406454348
rusXQ	X	275	4	0	0	14	0.025	0.121208344	0.406454348
jpnWAL	W	278	4	0	0	14	0.107000008	0.130014611	0.543825824
aatTIN	T	281	4	0	0	14	0.082000002	0.133114115	-0.413238228
engXIN	X	281	4	0	0	14	0.077000007	0.133114115	-0.413238228
xuuPI	P	281	4	0	0	14	0.066	0.133114115	-0.413238228
laoXQ	X	281	4	0	0	14	0.081	0.133114115	-0.413238228
sppPI	P	281	4	0	0	14	0.079000004	0.133114115	-0.413238228
hunXQI	X	284	6	0	2	10	0.006000001	0.133951484	-0.436395521
sppXI	X	285	6	2	0	10	0.501000047	0.13965666	-0.571013429
engXIN	X	286.5	4	0	2	12	0.074000001	0.140843689	-0.415307031
rusXIR	X	286.5	4	0	2	12	0.079000004	0.140843689	-0.415307031
engTW	W	289.5	2	0	0	16	0.093000002	0.169126046	0.406454348
fraWA	W	289.5	2	0	0	16	0.097000003	0.169126046	0.406454348
tszWA	W	289.5	2	0	0	16	0.079000004	0.169126046	0.406454348
tglWA	W	289.5	2	0	0	16	0.095000006	0.169126046	0.406454348
tglTZ	T	292	0	0	2	16	0.377000004	0.267763207	0.043298344
eusTI	T	294.5	2	0	0	16	0.501000047	0.284848853	-0.362200046
hunTPI	T	294.5	2	0	0	16	0.501000047	0.284848853	-0.362200046
rusTN	T	294.5	2	0	0	16	0.501000047	0.284848853	-0.362200046
somTI	T	294.5	2	0	0	16	0.501000047	0.284848853	-0.362200046
engXQI	X	297	4	0	0	14	0.131000012	0.284848853	-0.542611547
jaaWAD	W	301	4	0	0	12	0.334000021	0.424801861	0.483436069
yuxWAD	W	301	4	0	0	12	0.335000008	0.424801861	0.483436069
kwoBA	B	301	4	0	0	12	0.32100001	0.424801861	0.483436069
mpcWAD	W	301	4	0	0	12	0.336000025	0.424801861	0.483436069
tglEDA	E	301	4	0	0	14	0.335000008	0.424801861	0.483436069
taeBAD	B	301	4	0	0	12	0.333000004	0.424801861	0.483436069
turED	E	301	4	0	0	12	0.327000022	0.424801861	0.483436069
agrED	E	320	2	0	0	14	0.326000005	0.424801861	-6.85E-17
arpED	E	320	2	0	0	14	0.389000028	0.424801861	-6.85E-17
arpPD	P	320	2	0	0	14	0.367000014	0.424801861	-6.85E-17
bapED	E	320	2	0	0	14	0.366000026	0.424801861	-6.85E-17
cavED	E	320	2	0	0	14	0.332000017	0.424801861	-6.85E-17
capED	E	320	2	0	0	14	0.307000011	0.424801861	-6.85E-17

Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
croED	E	320	2	0	0	14	0.378000021	0.424801861	-6.85E-17
dowE	E	320	2	0	0	14	0.376000017	0.424801861	-6.85E-17
fonED	E	320	2	0	0	14	0.278000027	0.424801861	-6.85E-17
itzED	E	320	2	0	0	14	0.376000017	0.424801861	-6.85E-17
dihPD	P	320	2	0	0	14	0.378000021	0.424801861	-6.85E-17
jpnPD	P	320	2	0	0	16	0.353000015	0.424801861	-6.85E-17
jaaED	E	320	2	0	0	14	0.296000004	0.424801861	-6.85E-17
kkiED	E	320	2	0	0	14	0.372000009	0.424801861	-6.85E-17
ckuED	E	320	2	0	0	14	0.307000011	0.424801861	-6.85E-17
kkkED	E	320	2	0	0	14	0.368000031	0.424801861	-6.85E-17
sesED	E	320	2	0	0	14	0.389000028	0.424801861	-6.85E-17
sesPD	P	320	2	0	0	14	0.357000023	0.424801861	-6.85E-17
kwoED	E	320	2	0	0	14	0.388000011	0.424801861	-6.85E-17
lajED	E	320	2	0	0	14	0.362000018	0.424801861	-6.85E-17
mybED	E	320	2	0	0	14	0.248000011	0.424801861	-6.85E-17
njoED	E	320	2	0	0	14	0.346000016	0.424801861	-6.85E-17
hurTPD	T	320	2	0	0	14	0.335000008	0.424801861	-6.85E-17
sheED	E	320	2	0	0	14	0.366000026	0.424801861	-6.85E-17
poiED	E	320	2	0	0	14	0.333000004	0.424801861	-6.85E-17
csoED	E	320	2	0	0	14	0.313000023	0.424801861	-6.85E-17
taeED	E	320	2	0	0	14	0.356000006	0.424801861	-6.85E-17
tweED	E	320	2	0	0	14	0.338000029	0.424801861	-6.85E-17
twePD	P	320	2	0	0	14	0.388000011	0.424801861	-6.85E-17
udeBD	B	320	2	0	0	14	0.341000021	0.424801861	-6.85E-17
udePD	P	320	2	0	0	14	0.377000004	0.424801861	-6.85E-17
jpnED	E	337	2	0	2	14	0.291000009	0.461567318	0.13687717
puiEDZ	E	337	2	0	2	12	0.263000011	0.461567318	0.13687717
puiTDZ	T	337	2	0	2	12	0.256000012	0.461567318	0.13687717
sesPDN	P	339	2	0	2	14	0.295000017	0.463564588	0.137524235
fraBIR	B	340	6	2	0	10	0.136000007	0.476255601	0.743761358
engED	E	341	2	0	2	14	0.403000027	0.488091048	-0.429756516
emeED	E	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
hunER	E	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
itzPED	P	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
yuxPID	P	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
puiEDI	E	345	4	0	0	12	0.472000033	0.519381298	-7.89E-17
shePD	P	345	4	0	0	12	0.425000012	0.519381298	-7.89E-17
udeEDI	E	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
fraTED	E	349	4	0	2	12	0.501000047	0.528245615	-0.038852256
somWAI	W	350	4	2	0	12	0.005	0.574546985	0.180361091

Label	Function	rank	Correct Yea	Wrong Yea	Wrong Nay	Correct Nay	volume	coord1D	coord2D
sheWAI	W	351	4	2	0	10	0.004	0.575205385	0.179693079
jpnBDI	B	352	4	2	2	10	0.006000001	0.576292217	0.182278837
ardE	E	354	4	2	0	10	0.346000016	0.663921995	0.462736038
eusWRA	W	354	4	2	0	10	0.350000024	0.663921995	0.462736038
udeWAR	W	354	4	2	0	10	0.343000025	0.663921995	0.462736038
fraTRN	T	356	4	0	2	12	0.079000004	0.723769319	-0.601140112
engPR	P	357	4	0	0	14	0.091000006	0.739759986	-0.634135662
eusERI	E	358	4	0	0	12	0.073000006	0.739908902	-0.634557034
gupEIR	E	359	4	0	0	12	0.085000001	0.739911055	-0.634563125
mleBWR	B	360	4	0	0	12	0.097000003	0.739919906	-0.634588169

APPENDIX E: DATA FOR THE SECOND MDS ANALYSIS

The following table shows the data used for the second MDS analysis, ordered by language. As in the first MDS analysis, each construction is identified by a small descriptive name and a string of characters (LgCx) formed by its ISO 639-3 code and an acronym formed by no more than three characters that represent what to my judgment were the most important functional and formal features of the construction. Thus, the characters represent the following information: A: non-prototypical subject or no subject at all; B: physical sensation statement; D: defective verb; E: existential construction; I: alteration of the prototypical SV order; L: particle or clitic; M: mirative construction; N: prosodic marking; P: presentative; Q: question word, interrogative element or intensifier; R: copula or relational element; T: hot news construction; W: weather statement; X: exclamative; Z: nominalization. Notice however that this code is for identification purposes only.

In the 'construction name' column, the bibliographical source for each construction is given.

The coding properly should be read as follows:

Y: The construction has the property in question.

N: The construction lacks the property in question.

M: Information regarding the property is missing for the construction. As in the first coding, this was only the case for information on intonation.

Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
Aguaruna	Mirative/thetic (Overall 2007: 375, 472)	agrMTL	N	N	N	N	N	N	Y	N	Y
Aguaruna	Existential (Ibid: 121)	agrED	Y	N	N	N	N	N	N	N	M
Aguaruna	Mirative copula (Ibid: 240)	agrMRL	N	Y	N	N	N	N	Y	N	M
Aguaruna	Mirative Zero (Ibid: 480)	agrML	N	N	N	N	N	N	Y	N	M
Apinaje	Locative Existential (De Oliveira 2005:	apnE	N	N	N	N	N	N	N	Y	M

Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
	248)										
Apinaje	Intensifier exclamative (Ibid: 153)	apnXQ	N	N	N	N	N	Y	N	N	M
Arabana	Existential verbs (Hercus 1994: 292)	ardER	N	Y	N	N	N	N	N	N	M
Arabana	Existential inanimates (Ibid: 294)	ardE	N	Y	N	Y	N	N	N	N	M
Arabana	Clitic Exclamative (Ibid: 253)	ardXLN	N	N	N	N	N	N	Y	Y	Y
Arapaho	Mirative (Cowell 2008: 293, 328)	arpMLZ	N	N	Y	N	N	N	Y	N	M
Arapaho	Presentative (Ibid: 309)	arpPD	Y	N	N	N	N	N	N	N	M
Arapaho	Clitic existential (Ibid: 193)	arpEL	N	N	N	N	N	N	Y	Y	M
Arapaho	Existential verb (Ibid: 429)	arpED	Y	N	N	N	N	N	N	N	M
Arapaho	Thetic (Ibid: 400)	arpTI	N	N	N	N	Y	N	N	N	M
Arapaho	Exclamative (Ibid: 253)	arpXQ	N	N	N	N	N	Y	N	Y	M
Arvanitika	Thetic Inversion (Sasse 1991: 423-24)	aatTIN	N	N	N	N	Y	N	N	N	Y
Arvanitika	Thetic Intonation (Ibid: 423)	aatTN	N	N	N	N	N	N	N	N	Y
Arvanitika	Exclamative (Ibid: 371)	aatXQI	N	N	Y	N	Y	Y	N	N	M
Arvanitika	Verbless Exclamative (Ibid: 372)	aatXI	N	N	N	N	Y	N	N	Y	M
Awa Pit	Existential (Curnow 1994: 122)	kwiE	N	N	N	N	N	N	N	N	M
Awa Pit	Weather (Ibid: 199)	kwiWA	N	N	N	Y	N	N	N	N	M
Awa Pit	Exclamatives (Ibid: 353)	kwiXQ	N	N	N	N	N	Y	N	Y	M
Bantawa	Mirative (Doornenbal 2009: 314)	bapMLZ	N	N	Y	N	N	N	Y	N	M
Bantawa	Existential (Ibid: 119)	bapED	Y	N	N	N	N	N	N	N	M
Bantawa	Exclamative (Ibid: 293)	bapXQZ	N	N	Y	N	N	Y	N	N	M
Basque	Existential (Hualde & Ortiz de Urbina 2003: 368)	eusERI	N	Y	N	N	Y	N	N	N	M
Basque	Thetic (Bellver & Michaelis 1999)	eusTI	N	N	N	N	Y	N	N	N	N
Basque	Weather (Hualde & Ortiz de Urbina: 377)	eusWRA	N	Y	N	Y	N	N	N	N	M
Basque	Relative Excl. (Ibid: 568)	eusXZ	N	N	Y	N	N	N	N	N	M
Basque	Dem. Exclamatives (Ibid: 566)	eusXRZ	N	Y	Y	N	N	N	N	N	M
Basque	Left-dislocation excl (Ibid: 568)	eusXN	N	N	N	N	Y	N	N	N	M
Basque	Possessive Excl. (Ibid: 572)	eusXN	N	N	Y	N	N	N	N	Y	M
Basque	Excl particle (Ibid: 569)	eusXL	N	N	N	N	N	N	Y	N	M
Basque	Wh exclamatives (Ibid: 564)	eusXQZ	N	N	Y	N	N	Y	N	N	Y
Basque	Affirmative Excl. (Ibid: 571)	eusXL	N	N	N	N	N	N	Y	Y	M
Biblical Hebrew	Thetic marker (Van der Merwe et al. 1999: 328)	hboTPL	N	N	N	N	N	N	Y	N	M
Biblical Hebrew	Existential (Ibid: 321)	hboEL	N	N	N	N	N	N	Y	Y	M
Biblical Hebrew	Inversion thet. (Shimasaki 2002: 143-84)	hboXI	N	N	N	N	Y	N	N	N	M
Biblical Hebrew	Exclamative (Gesenius et al. 1910: §148)	hboXQ	N	N	N	N	N	Y	N	N	M
Bininj Gun-Wok	Phys. Pain (Evans 2003: 460)	gupBI	N	N	N	N	Y	N	N	N	M
Bininj Gun-Wok	Existential-Thetic (Ibid: 478, 561)	gupEIR	N	Y	N	N	Y	N	N	N	M
Bininj Gun-Wok	Exclamative (Ibid: 144, 354)	gupXQ	N	N	N	N	N	Y	N	Y	M
Cavinena	Existential (Guillaume 2008: 162)	cavED	Y	N	N	N	N	N	N	N	M
Cavinena	Mirative/Exclamative (Ibid: 651)	cavMXC	N	N	N	N	N	N	Y	N	M
Chipaya	Mirative (Cerrón-Palomino 2006: 167)	capML	N	N	N	N	N	N	Y	N	M

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Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
Chipaya	Mirative tribulative (Ibid: 168)	capML	N	N	N	N	N	N	Y	N	M
Chipaya	Existential (Ibid: 203)	capED	Y	N	N	N	N	N	N	N	M
Chipaya	Weather (Ibid: 198)	capWA	N	N	N	Y	N	N	N	N	M
Crow	Mirative (Graczyk 2007: 328)	croML	N	N	N	N	N	N	Y	N	M
Crow	Existential (Ibid: 317)	croED	Y	N	N	N	N	N	N	N	M
Crow	Existential/presentative (Ibid: 275)	croEPL	N	N	N	N	N	N	Y	Y	M
Crow	Exclamative (Ibid: 396)	croXLN	N	N	N	N	N	N	Y	N	Y
Cupeno	Mirative (Hill 2005: 66)	cupML	N	N	N	Y	N	N	Y	N	M
Cupeno	Existential-Presentative (Ibid: 152)	cupEPR	N	Y	N	N	N	N	N	N	M
Cupeno	Weather (Ibid: 124)	cupWAL	N	N	N	Y	N	N	Y	N	M
Doyayo	Existential (Wiering & Wiering 1994: 160)	dowE	Y	N	N	N	N	N	N	N	M
Doyayo	Exclamative (Ibid: 247)	dowXZ	N	N	Y	N	N	N	N	N	Y
Emerillon	Mirative (Rose 2003: 414)	emeMQ	N	N	N	N	N	Y	N	N	M
Emerillon	Existential Copula (Ibid: 270)	emeED	Y	N	N	N	Y	N	N	N	M
Emerillon	Nonverbal Existential (Ibid: 272)	emeE	N	N	N	N	N	N	N	Y	M
English	Existential	engED	N	N	Y	N	Y	N	N	N	N
English	Presentative	engPR	N	Y	N	N	Y	N	N	N	N
English	Thetic (Sasse 1987)	engTN	N	N	N	N	N	N	N	N	Y
English	Weather	engTW	N	N	N	Y	N	N	N	N	N
English	Antitopic Excl. (Michaelis & Lambrecht 1996a: 384)	engXN	N	N	N	N	N	N	N	N	Y
English	Bare NP Excl. (Ibid: 387)	engX	N	N	N	N	N	N	N	Y	N
English	What-a Excl. (Ibid: 385)	engXQI	N	N	N	N	Y	Y	N	N	N
English	Degree-Adv. Excl. (Ibid: 386)	engXQ	N	N	N	N	N	Y	N	N	N
English	Inversion Excl. (Ibid: 383)	engXIN	N	N	N	N	Y	N	N	N	Y
English	*That's a* Excl	engXR	N	Y	N	N	N	N	N	N	Y
English	Nominal Extrapos. (Ibid: 387)	engXIN	N	Y	N	N	Y	N	N	N	Y
Fongbe	Surprise Marker (Lefebvre & Brousseau 2002: 126)	fonML	N	N	N	N	N	N	Y	N	M
Fongbe	Body States (Ibid: 251)	fonBA	N	N	N	Y	N	N	N	N	M
Fongbe	Existentials (Ibid: 149)	fonED	Y	N	N	N	N	N	N	N	M
Fongbe	Presentative (Ibid: 127)	fonPL	N	N	N	N	N	N	Y	Y	M
Fongbe	Weather (Ibid: 245)	fonWA	N	N	N	Y	N	N	N	N	M
Fongbe	Exclamatives (Ibid: 378)	fonXQ	N	N	N	N	N	Y	N	N	M
French	Existential *Il y a NP QUI* (Sasse 1987: 538)	fraTED	Y	N	Y	N	Y	N	N	N	N
French	*C'est* Thetic (Ibid: 538)	fraTRN	N	Y	Y	N	Y	N	N	N	N
French	Physical sensation (Ibid: 539)	fraBIR	N	Y	Y	Y	N	N	N	N	N
French	Presentative (Ibid: 539)	fraPLZ	N	N	Y	N	N	N	Y	N	N
French	Relative thetic (Ibid: 539)	fraTZ	N	N	Y	N	N	N	N	N	Y
French	Conjunction thetic (Ibid: 539)	fraTLZ	N	N	Y	N	N	N	Y	N	Y
French	Weather	fraWA	N	N	N	Y	N	N	N	N	N
French	Complement. Excl (Marandin 2008: 438)	fraXZ	N	N	N	Y	N	N	N	N	Y
French	Intensifier Excl.(Ibid: 438)	fraXS	N	N	N	Y	N	N	N	N	Y

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Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
Gooniyandi	Mirative (McGregor 1990: 467)	gniML	N	N	N	N	N	N	Y	N	M
Gooniyandi	Background Existential (Ibid: 313)	gniER	N	Y	N	N	N	N	N	N	M
Gooniyandi	Existential (Ibid: 304)	gniE	N	N	N	N	N	N	N	Y	M
Haida	Mirative intensifier (Enrico 2003: 160)	haiMQN	N	N	N	N	N	Y	N	N	Y
Haida	Mirative fragment (Ibid: 159)	haiMZ	N	N	Y	N	N	N	N	N	M
Haida	Mirative clitics (Ibid: 156)	haiML	N	N	N	N	N	N	Y	N	M
Haida	Physical pain (Ibid: 299)	haiBAN	N	N	N	Y	N	N	N	N	Y
Haida	Thetic (Ibid: 202)	haiTL	N	N	N	N	N	N	Y	N	M
Haida	Weather (Ibid: 87)	haiWA	N	N	N	Y	N	N	N	N	M
Haida	Exclamative (Ibid: 158)	haiXZL	N	N	Y	N	N	N	Y	N	Y
Haida	Exclamative nominalization (Ibid: 160)	haiXZ	N	N	Y	N	N	N	N	N	M
Haida	Exclamative intensifier (Ibid: 164)	haiXQN	N	N	N	N	N	Y	N	N	Y
Haida	Exclamative question (Ibid: 162)	haiXQ	N	N	N	N	N	Y	N	N	M
Haida	Exclamative QW (Ibid: 163-66)	haiXLQ	N	N	N	N	N	Y	Y	N	M
Haida	Exclamative particle (Ibid: 165)	haiXL	N	N	N	N	N	N	Y	N	M
Hausa	Existentials (Newman 2000: 178)	hauEL	N	N	N	N	N	N	Y	Y	M
Hausa	Thetic (Hartmann & Zimmermann 2007: 18)	hauTLI	N	N	N	N	Y	N	Y	N	M
Hausa	Presentational (Newman 2000: 181)	hauPL	N	N	N	N	N	N	Y	Y	M
Hausa	Derived excl. (Ibid: 177)	hauXL	N	N	N	N	N	N	Y	Y	M
Hausa	Existent. excl. (Ibid: 179)	hauXEL	N	N	N	N	N	N	Y	Y	M
Hausa	Equative excl. (Ibid: 165)	hauX	N	N	N	N	N	N	N	Y	M
Hungarian	Existential (Sasse 1995: 181)	hunER	Y	N	N	N	Y	N	N	N	M
Hungarian	Thetic VS (Sasse 1995)	hunTPI	N	N	N	N	Y	N	N	N	N
Hungarian	Relative Excl. (Liptak 2006: 380)	hunXZN	N	N	Y	N	N	N	N	N	Y
Hungarian	De-Exclamative (Ibid: 349)	hunXLI	N	N	N	N	Y	N	Y	N	Y
Hungarian	Wh-Exclamative (Ibid: 344)	hunXQI	N	N	Y	N	Y	Y	N	N	Y
Imonda	Physical (Seiler 1985: 139)	imnBA	N	N	N	Y	N	N	N	N	M
Imonda	Existential (Ibid: 157)	imnER	N	Y	N	N	N	N	N	N	M
Imonda	Weather (Ibid: 106)	imnWA	N	N	N	Y	N	N	N	N	M
Imonda	Exclamatives (Ibid: 35)	imnXL	N	N	N	N	N	N	Y	Y	M
Itzaj Maya	Existential (Hofling 2000: 202, 407)	itzED	Y	N	N	N	N	N	N	N	M
Itzaj Maya	Existential w/ intensifier (Ibid: 408)	itzE	N	N	N	N	N	N	N	Y	M
Itzaj Maya	Presentative (Ibid: 197)	itzPI	N	N	N	N	Y	N	N	Y	M
Itzaj Maya	Existent. /presentative (Ibid: 299)	itzPED	Y	N	N	N	Y	N	N	N	M
Itzaj Maya	Thetic (Gutiérrez-Bravo & Monforte y Madera 2010)	itzTI	N	N	N	N	Y	N	N	N	M
Itzaj Maya	Exclamative particle (Hofling 2000: 245)	itzXLN	N	N	N	N	N	N	Y	Y	Y
Itzaj Maya	Exclamative (Ibid: 236)	itzXQ	N	N	N	N	N	Y	N	Y	M
Jamul Tiipay	Presentational (Miller 2001: 348)	dihPD	Y	N	N	N	N	N	N	N	M
Jamul Tiipay	Exclamative (Ibid: 270)	dihXQ	N	N	N	N	N	Y	N	N	M
Japanese	Existentials (Kaiser et al. 2001: 443)	jpnED	Y	N	N	N	N	N	Y	N	N
Japanese	Thetics (Kuroda 1972b)	jpnTI	N	N	N	N	N	N	Y	N	N

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Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
Japanese	Exclamatives (Kaiser et al.: 267)	jpnXQL	N	N	N	N	N	Y	Y	N	Y
Japanese	Physical sensation (Motomi Kajitani, p.c.)	jpnBDI	N	Y	N	Y	Y	N	N	N	N
Japanese	Presentative (Motomi Kajitani, p.c.)	jpnPD	Y	N	N	N	N	N	N	N	N
Japanese	Weather (Martin 1975: 184)	jpnWAL	N	N	N	Y	N	N	Y	N	N
Jarawara	Mirative 2 (Dixon 2004: 206)	jaaML2	N	N	N	N	N	N	Y	N	M
Jarawara	Existential (Ibid: 380)	jaaED	Y	N	N	N	N	N	N	N	M
Jarawara	Mirative (Ibid: 167)	jaaML	N	N	N	N	N	N	Y	N	M
Jarawara	Weather (Ibid: 380)	jaaWAD	Y	N	N	Y	N	N	N	N	M
Jarawara	Exclamative particles (Ibid: 241)	jaaXL	N	N	N	N	N	N	Y	N	M
Jarawara	Exclamative (Ibid: 168)	jaaXZL	N	N	Y	N	N	N	Y	N	M
Kagulu	Existentials (Petzell 2008: 165)	kkiED	Y	N	N	N	N	N	N	N	M
Kagulu	Weather (Ibid: 158)	kkiWA	N	N	N	Y	N	N	N	N	M
Kagulu	Exclamatives (Ibid: 180)	kkiX	N	N	N	N	N	N	N	N	M
Kannada	Thetic (Sridhar 1990: 139)	kanTI	N	N	N	N	Y	N	N	N	M
Kannada	Exclamative (Ibid: 139, 150)	kanXIQ	N	N	N	N	Y	Y	Y	N	M
Ket	Mirative (Vajda 2004: 90)	ketMLN	N	N	N	N	N	N	Y	N	Y
Ket	Thetic (Ibid: 92)	ketTL	N	N	N	N	N	N	Y	N	M
Ket	Weather (Werner 1997: 339)	ketWA	N	N	N	Y	N	N	N	N	M
Ket	Exclamative (Vajda 2004: 32)	ketXQ	N	N	N	N	N	Y	N	Y	M
Khwe	Presentative (Kilian-Hatz 2008: 79)	xuuPI	N	N	N	N	Y	N	N	N	Y
Khwe	Existentials (Ibid: 251)	xuuE	N	N	N	N	N	N	N	Y	M
Khwe	Presentative copula (Ibid: 249)	xuuPR	N	Y	N	N	N	N	N	N	M
Khwe	Excl. (Ibid: 214)	xuuXQ	N	Y	N	N	N	Y	N	N	N
Kiowa	Mirative (Watkins 1984: 223)	kioML	N	N	N	N	N	N	Y	N	M
Kiowa	Physical Pain Subject (Ibid: 102)	kioBA	N	N	N	Y	N	N	N	N	M
Kiowa	Physical pain incorporation (Ibid: 102)	kioBI	N	N	N	N	Y	N	N	N	M
Kiowa	Existential (Ibid: 211)	kioER	N	Y	N	N	N	N	N	N	M
Kiowa	Presentative (Ibid: 192)	kioPL	N	N	N	N	N	N	Y	N	Y
Kiowa	Exclamative (Ibid: 183, 249)	kioXQ	N	N	N	N	N	Y	N	Y	M
Kisi	Existentials (Childs 1995: 122)	kssER	N	Y	N	N	N	N	N	N	M
Kisi	Exclamatives (Ibid: 293)	kssXQZ	N	N	Y	N	N	Y	N	N	M
Kisi	Idph. (Ibid: 122, 137, 251)	kssXS	N	N	N	N	N	N	Y	N	M
Koasati	Existential (Kimball 1991: 251, 453)	ckuED	Y	N	N	N	N	N	N	N	M
Koasati	Weather (Ibid: 173)	ckuWA	N	N	N	Y	N	N	N	N	M
Koasati	Exclamative (Ibid: 309)	ckuXN	N	N	N	N	N	N	N	N	Y
Koasati	Exclamative Suffix (Ibid: 483)	ckuXNL	N	N	N	N	N	N	Y	N	Y
Kokota	Existential-thetic (Palmer 2009: 214)	kkkED	Y	N	N	N	N	N	N	N	M
Kokota	Weather (Ibid: 127)	kkkWA	N	N	N	Y	N	N	N	N	M
Kokota	Exclamative (Ibid: 269)	kkkXL	N	N	N	N	N	N	Y	N	M
Kolyma Yukaghir	Existential (Maslova 2003: 124, 445)	yuxE	N	N	N	N	N	N	N	Y	M
Kolyma Yukaghir	Presentative (Ibid: 262, 471)	yuxPID	Y	N	N	N	Y	N	N	N	M

Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
Kolyma Yukaghir	Thetic (Ibid: 464)	yuxTI	N	N	N	N	Y	N	N	N	M
Kolyma Yukaghir	Weather (Ibid: 127)	yuxWAD	Y	N	N	Y	N	N	N	N	M
Kolyma Yukaghir	Exclamatives (Ibid: 489)	yuxXQ	N	N	N	N	N	Y	N	N	M
Kolyma Yukaghir	Mirative (Ibid: 173)	yuxML	N	N	N	N	N	N	Y	N	M
Koyraboro Senni	Existentials (Heath 1999: 180)	sesED	Y	N	N	N	N	N	N	N	M
Koyraboro Senni	Presentative defective (Ibid: 196)	sesPD	Y	N	N	N	N	N	N	N	M
Koyraboro Senni	Presentative clitic (Ibid: 196)	sesPL	N	N	N	N	N	N	Y	N	M
Koyraboro Senni	Presentative intonation (Ibid: 197)	sesPDN	Y	N	N	N	N	N	N	N	Y
Koyraboro Senni	Thetic (Ibid: 204)	sesTI	N	N	N	N	Y	N	N	N	M
Koyraboro Senni	Exclamative (Ibid: 293)	sesXQ	N	N	N	N	N	Y	N	N	M
Kuuk Thaayorre	Thetic (Gaby 2006: 415)	thdTL	N	N	N	N	N	N	Y	N	M
Kuuk Thaayorre	Existential (Ibid: 477)	thdE	N	N	N	N	N	N	N	Y	M
Kuuk Thaayorre	Mirative particle (Ibid: 582)	thdML	N	N	N	N	N	N	Y	N	M
Kuuk Thaayorre	Exclamative (Ibid: 247, 613)	thdXQ	N	N	N	N	N	Y	N	Y	M
Kuuk Thaayorre	Weather (Ibid: 170)	thdWA	N	N	N	Y	N	N	N	N	M
Kuuk Thaayorre	Exclamative intensifier (Ibid: 613)	thdXQL	N	N	N	N	N	Y	Y	Y	M
Kwaza	Existential (van der Voort 2004: 293)	xwaEL	N	N	N	N	N	N	Y	Y	M
Kwaza	Thetic (Ibid: 292)	xwaTL	N	N	N	Y	N	N	Y	N	M
Kwaza	Weather (Ibid: 213)	xwaWA	N	N	N	Y	N	N	N	N	M
Kwaza	*Good job!* Exclamative (Ibid: 238)	xwaXIL	N	N	N	N	Y	Y	Y	N	M
Kwaza	Lamentative (Ibid: 547)	xwaXL	N	N	N	N	N	N	Y	N	M
Kwaza	Expletive (Ibid: 549)	xwaXLZ	N	N	Y	N	N	N	Y	N	M
Kwaza	Mirative (Ibid: 554)	xwaML	N	N	N	N	N	N	Y	N	M
Kwaza	Exclamative (Ibid: 601)	xwaXLQ	N	N	N	N	N	Y	Y	N	M
Kwomtari	Existential (Spencer 2008: 105)	kwoED	Y	N	N	N	N	N	N	N	M
Kwomtari	Physical pain (Ibid: 104)	kwoBA	Y	N	N	Y	N	N	N	N	M
Kwomtari	Exclamative (Ibid: 148)	kwoXLQ	Y	N	N	N	N	Y	Y	N	M
Lango	Existential (Noonan 1992: 147)	lajED	Y	N	N	N	N	N	N	N	M
Lango	Weather (Ibid: 188)	lajWA	N	N	N	Y	N	N	N	N	M
Lango	Exclamatives (Ibid: 187)	lajXLQ	N	N	N	N	N	Y	Y	N	M
Lao	Existential (Enfield 2007: 108)	laoEQ	N	N	N	N	N	Y	N	Y	M
Lao	Presentational (Ibid: 158)	laoPI	N	N	N	N	Y	N	N	N	M
Lao	Reduplication exclamative (Ibid: 255)	laoXQ	N	N	N	N	Y	N	N	N	Y
Lavukaleve	Surprise marker (Terrill 2003: 437)	lvkMLZ	N	N	Y	N	N	N	Y	N	M
Lavukaleve	Existential (Ibid: 196)	lvkEL	N	N	N	N	N	N	Y	N	M
Lavukaleve	Focus marker (Ibid: 298)	lvkTL	N	N	N	N	N	N	Y	N	M
Lavukaleve	Presentative suffixes (Ibid: 203)	lvkPL	N	N	N	N	N	N	Y	Y	M
Lavukaleve	Exclamative (Ibid: 200)	lvkXQ	N	N	N	N	N	Y	N	N	M
Lezgian	Mirative (Haspelmath 1993: 243)	lezML	N	N	N	N	N	N	Y	N	M
Lezgian	Existential (Ibid: 256)	lezER	N	Y	N	N	N	N	N	N	M
Lezgian	Weather (Ibid: 269)	lezWA	N	N	N	Y	N	N	N	N	M

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Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
Lezgian	Exclamative genitive (Ibid: 313)	lezXZ	N	N	Y	N	N	N	N	N	M
Lezgian	Exclamative particle (Ibid: 244)	lezXL	N	N	N	N	N	N	Y	N	M
Lezgian	Exclamative question (Ibid: 431)	lezXQ	N	M	N	N	N	Y	N	N	M
Makah	Mirative (Davidson 2002: 276)	myhML	N	N	N	N	N	N	Y	N	M
Makah	Weather (Ibid: 124)	myhWA	N	N	N	Y	N	N	N	N	M
Makah	Existential (Ibid: 132)	myhE	N	N	N	N	N	N	N	Y	M
Manambu	Physical / Weather (Aikhenvald 2008: 85)	mleBWR	N	Y	N	N	Y	N	N	N	M
Manambu	Presentative (Ibid: 628)	mleP	N	N	N	N	N	N	N	Y	M
Manambu	Weather (Ibid: 89)	mleWA	N	N	N	Y	N	N	N	N	M
Manambu	Exclamative intensifier (Ibid: 265)	mleXLZ	N	N	Y	N	N	Y	Y	N	M
Manambu	Question word exclamative (Ibid: 226)	mleXQ	N	N	N	N	N	Y	N	Y	M
Manambu	Bare NP Exclamative (Ibid: 227)	mleX	N	N	N	N	N	N	N	Y	M
Mangarayi	Phys. Sens. (Merlan 1989: 60)	mpcBA	N	N	N	Y	N	N	N	N	M
Mangarayi	Weather (Ibid: 144)	mpcWAD	Y	N	N	Y	N	N	N	N	M
Mangarayi	Exclamative reduplication (Ibid: 167)	mpcXQ	N	N	N	N	N	Y	N	N	M
Mapuche	Verbalizer weather (Smeets 2008: 125)	arnWL	N	N	N	N	N	N	Y	N	M
Mapuche	Exclamative/MIrative (Ibid: 110)	arnMXL	N	N	N	N	N	N	Y	Y	M
Mbay	Mirative (Keegan 1997: 138)	mybML	N	N	N	N	N	N	Y	N	M
Mbay	Existential (Ibid: 76)	mybED	Y	N	N	N	N	N	N	N	M
Mbay	Presentative (Ibid: 76)	mybPL	N	N	N	N	N	N	Y	Y	M
Mbay	Weather (Ibid: 62)	mybWA	N	N	N	Y	N	N	N	N	M
Mbay	Exclamatives (Ibid: 151)	mybXZ	N	N	Y	N	N	N	N	N	M
Mbay	Ideophones (Ibid: 141)	mybXQ	N	N	N	N	N	Y	N	N	M
Mongsen Ao	Existential defective (Coupe 2009: 374)	njoED	Y	N	N	N	N	N	N	N	M
Mongsen Ao	Intransitive Existential (Ibid: 374)	njoE	N	N	N	N	N	N	N	N	M
Mongsen Ao	Mirative particle (Ibid: 140)	njoML	N	N	N	N	N	N	Y	N	M
Mongsen Ao	Exclamative particle (Ibid: 141)	njoXQN	N	N	N	N	N	Y	N	N	Y
Moseten	Existential (Sakel 2004: 380)	casE	N	N	N	N	N	N	N	Y	M
Moseten	Presentative (Ibid: 388)	casPQ	N	N	N	N	N	Y	N	Y	M
Moseten	Exclamatives (Ibid: 399)	casX	N	N	N	N	N	N	Y	Y	M
Musqueam	Existential (Suttles 2004: 62)	hurE	N	N	N	N	N	N	N	Y	M
Musqueam	Relative clause existential (Ibid: 85)	hurEZ	N	Y	Y	N	N	N	N	N	M
Musqueam	Presentative / thetic (Ibid: 364)	hurTPD	Y	N	N	N	N	N	N	N	M
Musqueam	Emphatic marker (Ibid: 387)	hurML	N	N	N	N	N	N	Y	Y	M
Musqueam	Exclamative (Ibid: 468)	hurXQZ	N	N	Y	N	N	Y	N	N	M
Ngiyambaa	Mirative (Donaldson 1980: 258)	wyML	N	N	N	N	N	N	Y	N	M
Ngiyambaa	Existential (Ibid: 108)	wybEL	N	N	N	N	N	N	Y	Y	M
Ngiyambaa	Existential copula (Ibid: 233)	wybER	N	Y	N	N	N	N	N	N	M
Ngiyambaa	Presentative (Ibid: 138)	wybP	N	N	N	N	N	N	N	Y	M
Ngiyambaa	Weather (Ibid: 162, 185)	wybWA	N	N	N	Y	N	N	N	N	M
Ngiyambaa	Exclamative particle (Ibid: 242)	wybXL	N	N	N	N	N	N	Y	N	M

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Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
Ngiyambaa	Exclamative (Ibid: 329)	wybXQL	N	Y	N	N	N	Y	Y	N	M
Nivkh	Mirative (Gruzdeva 1998: 44)	nivML	N	N	N	N	N	N	Y	N	M
Nivkh	Inanimate subj. weather & Phys. (Ibid: 41)	nivWBA	N	N	N	Y	N	N	N	N	M
Nivkh	Subjectless Weather & Phys. Pain (Ibid: 41)	nivBWA	N	N	N	Y	N	N	N	N	M
Oksapmin	Existential verbless (Loughnane 2009: 167)	opmE	N	N	N	N	N	N	N	Y	M
Oksapmin	First sentence (Ibid: 121-122)	opmPTL	N	N	N	N	N	N	Y	N	M
Oksapmin	Thetic focus (Ibid: 168)	opmTL	N	N	N	N	N	N	Y	N	M
Oksapmin	Exclamative (Ibid: 195, 401)	opmXQL	N	N	N	N	N	Y	Y	N	M
Oksapmin	Exclamative intensifier (Ibid: 173)	opmXQ	N	N	N	N	N	Y	N	Y	M
Puinave	Mirative (Girón Higuita 2008: 284)	puiML	N	N	N	N	N	N	Y	N	M
Puinave	Syntetic Existential (Ibid: 377)	puiEDZ	Y	N	Y	N	N	N	N	N	M
Puinave	Analytic Existential (Ibid: 378)	puiEDI	Y	N	N	N	Y	N	N	N	M
Puinave	Thetic (Ibid: 254)	puiTDZ	Y	N	Y	N	N	N	N	N	M
Puinave	Weather (Ibid: 379)	puiWA	N	N	N	Y	N	N	N	N	M
Puinave	Exclamative (Ibid: 290)	puiXL	N	N	N	N	N	N	Y	N	M
Puinave	Exclamative 2 (Ibid: 306)	puiXQ	N	N	N	N	N	Y	N	N	M
Purepecha	Weather (Chamereau 2000: 159)	tszWA	N	N	N	Y	N	N	N	N	N
Purepecha	Excl-mir (Ibid: 92, 113, 193, 242, 284)	tszMXL	N	N	N	N	N	N	Y	N	Y
Qiang	Mirative (LaPolla & Huang 2003: 200-02)	qxsML	N	N	N	N	N	N	Y	N	M
Qiang	Physical Pain (Ibid: 73)	qxsB	N	N	N	N	N	N	N	Y	M
Qiang	Existential (Ibid: 133)	qxsEA	N	N	N	Y	N	N	N	N	M
Qiang	Weather (Ibid: 75)	qxsWA	N	N	N	Y	N	N	N	N	M
Russian	Thetic SV (Maslova 1995: 108)	rusTI	N	N	N	Y	N	N	N	N	Y
Russian	Thetic VS and existential (Ibid: 109)	rusTEN	N	N	N	N	Y	N	N	N	N
Russian	Part. Excl. (Wade & Guillespie 2011: 505)	rusXL	N	N	N	N	N	N	Y	Y	Y
Russian	Interrog. excl. (Ibid: 149, 225)	rusXQ	N	N	N	Y	N	N	N	N	Y
Russian	Split Exclamatives (Ibid: 531)	rusXIR	N	Y	N	N	Y	N	N	N	Y
Sabane	Existential (Araujo 2004: 96)	saeE	N	N	N	N	N	N	N	Y	M
Sabane	Thetic (Ibid: 196)	saeTL	N	N	N	N	N	N	Y	N	M
Sabane	Weather (Ibid: 157)	saeWA	N	N	N	Y	N	N	N	N	M
Sabane	Exclamative (Ibid: 96)	saeXQ	N	N	N	N	N	Y	N	N	M
Semelai	Mirative (Kruspe 2004: 281-290)	szaML	N	N	N	N	N	N	Y	N	M
Semelai	Existential (Ibid: 274)	szaELI	N	N	N	N	Y	N	Y	Y	M
Semelai	Exclamative Nominalization (Ibid: 225)	szaXZ	N	N	Y	N	N	N	N	Y	M
Semelai	Exclamative (Ibid: 184, 311)	szaXQ	N	N	N	N	N	Y	N	Y	M
Sheko	Presentative (Hellenthal 2010: 148)	shePED	Y	N	N	N	Y	Y	N	N	M
Sheko	Existentials (Ibid: 327)	sheED	Y	N	N	N	N	N	N	N	M
Sheko	Thetic (Ibid: 434)	sheTI	N	N	N	N	Y	N	N	N	M
Sheko	Weather (Ibid: 152, 434)	sheWAI	N	N	N	Y	Y	N	N	N	M
Sheko	Exclamative (Ibid: 216)	sheXZ	N	N	Y	N	N	N	N	Y	M
Sierra Popoluca	Existential (de Jong Boudreault 2009: 263)	poiED	Y	N	N	N	N	N	N	N	M

Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
Sierra Popoluca	Exclamative (Ibid: 238)	poiXQ	N	N	N	N	N	Y	N	Y	M
Slave	Mirative (Rice 1989: 400)	denML	N	N	N	N	N	N	Y	N	M
Slave	Existential (Ibid: 266)	denE	N	N	N	N	N	N	N	Y	M
Slave	Exclamatives (Ibid: 358)	denXQ	N	N	N	N	N	Y	N	N	M
Sochiapan Chinantec	Physical pain (Foris 2000: 179)	csoBA	N	N	N	Y	N	N	N	N	M
Sochiapan Chinantec	Existential (Ibid: 133)	csoED	Y	N	N	N	N	N	N	N	M
Sochiapan Chinantec	Presentative (Ibid: 193)	csoPR	N	Y	N	N	N	N	N	N	M
Sochiapan Chinantec	Exclamative-mirative (Ibid: 274,373)	csoMXL	N	N	N	N	N	N	Y	N	M
Somali	Thetic focus (Saeed 1999: 231; Tosco 2002)	somTI	N	N	N	N	Y	N	N	N	N
Somali	Presentative (Saeed 1999: 189)	somPI	N	N	N	N	Y	N	N	Y	M
Somali	Weather (Tosco 2002: 32)	somWAI	N	N	N	Y	Y	N	N	N	N
Somali	Excl. (Saeed 1999: 155)	somXQ	N	Y	N	N	N	Y	N	N	N
Supyire	New topic (Carlson 1994: 479)	sppPI	N	N	N	N	Y	N	N	N	Y
Supyire	Existential (Ibid: 247)	sppER	N	Y	N	N	N	N	N	N	M
Supyire	Presentative (Ibid: 241)	sppP	N	N	N	N	N	N	N	Y	M
Supyire	Exclamatives (Ibid: 196)	sppXI	N	N	N	N	Y	N	N	Y	Y
Supyire	Thetic (Ibid: 301)	sppTL	N	N	N	N	N	N	Y	N	M
Tagalog	Existential (Naylor 1995: 179)	tglEDA	Y	N	N	Y	N	N	N	N	N
Tagalog	Weather (Kroeger 1993: 49)	tglWA	N	N	N	Y	N	N	N	N	N
Tagalog	Thetic (Sasse 1987: 553)	tglTZ	N	N	Y	N	N	N	N	N	N
Tagalog	Exclamative (Kaufman 2011: 725)	tglXL	N	N	N	N	N	N	Y	Y	M
Tariana	Phys. Sensation (Aikhenvald 2003: 241)	taeBAD	Y	N	N	Y	N	N	N	N	M
Tariana	Existential (Ibid: 250)	taeED	Y	N	N	N	N	N	N	N	M
Tariana	Weather (Ibid: 399)	taeWA	N	N	N	Y	N	N	N	N	M
Tariana	Verbless Exclamative (Ibid: 506)	taeXN	N	N	N	N	N	N	N	Y	Y
Tariana	Mirative (Ibid: 453)	taeMLD	Y	N	N	N	N	N	Y	N	M
Tariana	Exclamative (Ibid: 368)	taeXLZ	N	N	Y	N	N	N	Y	N	Y
Teiwa	Existential (Klamer 2010: 231)	tweED	Y	N	N	N	N	N	N	N	M
Teiwa	Presentative (Ibid: 399)	twePD	Y	N	N	N	N	N	N	N	M
Teiwa	Presentative verbless (Ibid: 235, 401)	twePI	N	N	N	N	Y	N	N	Y	M
Teiwa	Weather (Ibid: 156)	tweWA	N	N	N	Y	N	N	N	N	M
Teiwa	Exclamatives (Ibid: 243)	tweX	N	N	N	N	N	N	N	Y	M
Trio	Existential (Meira 1999: 478, 544; Carlin 2004: 523)	triEL	N	N	N	N	N	N	Y	Y	M
Trio	Sensory State (Carlin 2004: 330)	triBL	N	N	N	N	N	N	Y	N	M
Trio	Existential quantifier (Ibid: 408)	triER	N	Y	N	N	N	N	N	N	M
Trio	Exclamative clitic (Ibid: 443)	triXL	N	N	N	N	N	N	Y	Y	M
Trio	Mirative clitic (Ibid: 452)	triML	N	N	N	N	N	N	Y	N	M
Trio	Thetic (Carlin 2011)	triTIZ	N	Y	Y	N	Y	N	Y	N	M
Trumai	Physical pain (Guirardello 1999: 171)	tpyBA	N	N	N	Y	N	N	Y	N	M
Trumai	Existential (Ibid: 210)	tpyEL	N	N	N	N	N	N	Y	Y	M

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Language	Constr. Name	LgCx	V1	V2	V3	S1	S2	C1	C2	C3	C4
Trumai	Thetic (Ibid: 171)	tpyTL	N	N	N	N	N	N	Y	N	M
Trumai	Weather (Ibid: 215)	tpyWAL	N	N	N	Y	N	N	Y	N	M
Trumai	Exclamative (Ibid: 102)	tpyXQL	N	N	N	N	N	Y	Y	N	M
Trumai	Existential-thetic (Ibid: 338)	tpyTEA	N	N	N	Y	N	N	Y	N	M
Turkish	Exist. (Göksel & Kerslake 2005: 122, 390)	turED	Y	N	N	Y	N	N	N	N	M
Turkish	Weather (Ibid: 388)	turWA	N	N	N	Y	N	N	N	N	M
Turkish	Exclamative redupl. (Ibid: 101, 114)	turXLQ	N	N	N	N	N	Y	Y	Y	Y
Turkish	Wh- exclamative (Ibid: 137)	turXQ	N	N	N	N	N	Y	N	N	Y
Turkish	Evidential Suffix (Ibid: 358)	turMR	N	Y	N	N	N	N	Y	N	M
Turkish	Subordinate Exclamative (Ibid: 112)	turXQZ	N	N	Y	N	N	Y	N	N	M
Udihe	Mirative (Nikolaeva & Tolskaya 2001: 462)	udeML	N	N	N	N	N	N	Y	N	M
Udihe	Pain, sickness (Ibid: 326)	udeBD	Y	N	N	N	N	N	N	N	M
Udihe	Thetic (Ibid: 255)	udeTL	N	N	N	N	N	N	Y	N	M
Udihe	Existentials (Ibid: 391, 486, 617)	udeEDI	Y	N	N	N	Y	N	N	N	M
Udihe	Verbless Existential (Ibid: 396)	udeE	N	N	N	N	N	N	N	Y	M
Udihe	Presentative (Ibid: 462)	udePD	Y	N	N	N	N	N	N	N	M
Udihe	Weather (Ibid: 509)	udeWA	N	N	N	Y	N	N	N	N	M
Udihe	Weather copula (Ibid: 615)	udeWAR	N	Y	N	Y	N	N	N	N	M
Udihe	Exclamative particle (Ibid: 459)	udeXL	N	N	N	N	N	N	Y	N	M
Udihe	Exclamative (Ibid: 444)	udeXLQ	N	N	N	N	N	Y	Y	Y	M
Udihe	Verbless exclamative (Ibid: 444)	udeXLO	N	N	N	N	N	N	Y	Y	M
Udihe	Presen.- thetic-Excl (Ibid: 468)	udeXPT	N	N	N	N	N	N	Y	N	M
Udihe	Presentative Inversion (Ibid: 844)	udePI	N	N	N	N	Y	N	N	N	M
West Greenlandic	Mirative (Fortescue 1984: 30)	kalMLN	N	N	Y	N	N	N	Y	N	Y
West Greenlandic	Existential (Ibid: 81)	kalEL	N	N	Y	N	N	N	Y	N	M
West Greenlandic	Thetic (Ibid: 296)	kalTL	N	N	N	N	N	N	Y	N	M
West Greenlandic	Exclamative (Ibid: 30)	kalXLZ	N	N	Y	N	N	N	Y	N	Y
West Greenlandic	Exclamative intensifier (Ibid: 200)	kalXQL	N	N	N	N	N	Y	Y	N	M
West Greenlandic	Affix of degree (Ibid: 31)	kalXQ	N	N	N	N	N	Y	N	N	Y

APPENDIX F: ONE-DIMENSIONAL RANKING FOR THE SECOND MDS

ANALYSIS

The following table shows the ranking of construction for the one-dimensional second

MDS analysis (see Chapter 5). The constructions are ordered according to their ranking.

Each construction is idenfied by its code (see Appendix 5). For a detailed explanation of

the values, see Poole (2005).

LgCx	rank	correctYea	wrongYea	wrongNay	correctNay	coord1D
mleXLZ	1	6	2	0	8	1
arpXQ	9.5	4	2	0	10	9.5
kwiXQ	9.5	4	2	0	10	9.5
gupXQ	9.5	4	2	0	10	9.5
itzXQ	9.5	4	2	0	10	9.5
ketXQ	9.5	4	2	0	10	9.5
kioXQ	9.5	4	2	0	10	9.5
thdXQ	9.5	4	2	0	10	9.5
thdXQL	9.5	6	0	0	10	9.5
laoEQ	9.5	4	2	0	10	9.5
mleXQ	9.5	4	2	0	10	9.5
casPQ	9.5	4	2	0	10	9.5
opmXQ	9.5	4	2	0	10	9.5
szaXQ	9.5	4	2	0	10	9.5
poiXQ	9.5	4	2	0	10	9.5
turXLQ	9.5	8	0	0	10	9.5
udeXLQ	9.5	6	0	0	10	9.5
ardXLN	30.5	6	0	0	12	30.5
arpEL	30.5	4	0	0	12	30.5
eusXL	30.5	4	0	0	12	30.5
hboEL	30.5	4	0	0	12	30.5
croEPL	30.5	4	0	0	12	30.5
fonPL	30.5	4	0	0	12	30.5
hauXL	30.5	4	0	0	12	30.5
hauXEL	30.5	4	0	0	12	30.5
hauEL	30.5	4	0	0	12	30.5
hauPL	30.5	4	0	0	12	30.5
imnXL	30.5	4	0	0	12	30.5
itzXLN	30.5	6	0	0	12	30.5
xwaEL	30.5	4	0	0	12	30.5
lvkPL	30.5	4	0	0	12	30.5

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LgCx	rank	correctYea	wrongYea	wrongNay	correctNay	coord1D
arnMXL	30.5	4	0	0	12	30.5
mybPL	30.5	4	0	0	12	30.5
casX	30.5	4	0	0	12	30.5
hurML	30.5	4	0	0	12	30.5
wybEL	30.5	4	0	0	12	30.5
rusXL	30.5	6	0	0	12	30.5
szaELI	30.5	4	0	2	10	30.5
tglXL	30.5	4	0	0	12	30.5
triXL	30.5	4	0	0	12	30.5
triEL	30.5	4	0	0	12	30.5
tpyEL	30.5	4	0	0	12	30.5
udeXLO	30.5	4	0	0	12	30.5
agrMRL	92.5	2	0	2	12	92.5
agrML	92.5	2	0	0	14	92.5
agrMTL	92.5	4	0	0	14	92.5
arpMLZ	92.5	2	0	2	12	92.5
bapMLZ	92.5	2	0	2	12	92.5
eusXL	92.5	2	0	0	14	92.5
hboTPL	92.5	2	0	0	14	92.5
cavMXC	92.5	2	0	0	14	92.5
capML	92.5	2	0	0	14	92.5
capML	92.5	2	0	0	14	92.5
croXLN	92.5	4	0	0	14	92.5
croML	92.5	2	0	0	14	92.5
cupML	92.5	2	0	2	12	92.5
cupWAL	92.5	2	0	2	12	92.5
fonML	92.5	2	0	0	14	92.5
fraTLZ	92.5	4	0	2	12	92.5
fraPLZ	92.5	2	2	2	12	92.5
gniML	92.5	2	0	0	14	92.5
haiXZL	92.5	4	0	2	12	92.5
haiXL	92.5	2	0	0	14	92.5
haiXLQ	92.5	2	0	2	12	92.5
haiML	92.5	2	0	0	14	92.5
haiTL	92.5	2	0	0	14	92.5
hauTLI	92.5	2	0	2	12	92.5
hunXLI	92.5	4	0	2	12	92.5
jpnXQL	92.5	4	0	2	12	92.5
jpnED	92.5	2	2	2	12	92.5
jpnTI	92.5	2	2	0	14	92.5
jpnWAL	92.5	2	2	2	12	92.5
jaaXZL	92.5	2	0	2	12	92.5

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LgCx	rank	correctYea	wrongYea	wrongNay	correctNay	coord1D
jaaXL	92.5	2	0	0	14	92.5
jaaML	92.5	2	0	0	14	92.5
jaaML2	92.5	2	0	0	14	92.5
kanXIQ	92.5	2	0	4	10	92.5
ketMLN	92.5	4	0	0	14	92.5
ketTL	92.5	2	0	0	14	92.5
kioML	92.5	2	0	0	14	92.5
kioPL	92.5	4	0	0	14	92.5
kssXS	92.5	2	0	0	14	92.5
ckuXNL	92.5	4	0	0	14	92.5
kkkXL	92.5	2	0	0	14	92.5
yuxML	92.5	2	0	0	14	92.5
sesPL	92.5	2	0	0	14	92.5
thdML	92.5	2	0	0	14	92.5
thdTL	92.5	2	0	0	14	92.5
xwaXLQ	92.5	2	0	2	12	92.5
xwaXLZ	92.5	2	0	2	12	92.5
xwaXIL	92.5	2	0	4	10	92.5
xwaXL	92.5	2	0	0	14	92.5
xwaML	92.5	2	0	0	14	92.5
xwaTL	92.5	2	0	2	12	92.5
kwoXLQ	92.5	2	0	4	10	92.5
lajXLQ	92.5	2	0	2	12	92.5
lvkEL	92.5	2	0	0	14	92.5
lvkTL	92.5	2	0	0	14	92.5
lvkMLZ	92.5	2	0	2	12	92.5
lezXL	92.5	2	0	0	14	92.5
lezML	92.5	2	0	0	14	92.5
myhML	92.5	2	0	0	14	92.5
arnWL	92.5	2	0	0	14	92.5
mybML	92.5	2	0	0	14	92.5
njoML	92.5	2	0	0	14	92.5
wybXQL	92.5	2	0	4	10	92.5
wybXL	92.5	2	0	0	14	92.5
wyML	92.5	2	0	0	14	92.5
nivML	92.5	2	0	0	14	92.5
opmXQL	92.5	2	0	2	12	92.5
opmPTL	92.5	2	0	0	14	92.5
opmTL	92.5	2	0	0	14	92.5
puiXL	92.5	2	0	0	14	92.5
puiML	92.5	2	0	0	14	92.5
tszMXL	92.5	4	0	0	14	92.5

LgCx	rank	correctYea	wrongYea	wrongNay	correctNay	coord1D
qxsML	92.5	2	0	0	14	92.5
saeTL	92.5	2	0	0	14	92.5
szaML	92.5	2	0	0	14	92.5
denML	92.5	2	0	0	14	92.5
csoMXL	92.5	2	0	0	14	92.5
sppTL	92.5	2	0	0	14	92.5
taeXLZ	92.5	4	0	2	12	92.5
taeMLD	92.5	2	0	2	12	92.5
triBL	92.5	2	0	0	14	92.5
triML	92.5	2	0	0	14	92.5
triTIZ	92.5	2	0	6	8	92.5
tpyXQL	92.5	2	0	2	12	92.5
tpyTEA	92.5	2	0	2	12	92.5
tpyBA	92.5	2	0	2	12	92.5
tpyTL	92.5	2	0	0	14	92.5
tpyWAL	92.5	2	0	2	12	92.5
turMR	92.5	2	0	2	12	92.5
udeXL	92.5	2	0	0	14	92.5
udeML	92.5	2	0	0	14	92.5
udeXPT	92.5	2	0	0	14	92.5
udeTL	92.5	2	0	0	14	92.5
kalXLZ	92.5	4	0	2	12	92.5
kalXQL	92.5	2	0	2	12	92.5
kalEL	92.5	2	0	2	12	92.5
kalMLN	92.5	4	0	2	12	92.5
kalTL	92.5	2	0	0	14	92.5
aatTN	156.5	2	0	0	16	156.5
aatTIN	156.5	2	0	2	14	156.5
eusXQZ	156.5	2	0	4	12	156.5
dowXZ	156.5	2	0	2	14	156.5
engXN	156.5	2	0	0	16	156.5
engXIN	156.5	2	0	2	14	156.5
engXIN	156.5	2	0	4	12	156.5
engXR	156.5	2	0	2	14	156.5
engTN	156.5	2	0	0	16	156.5
fraXZ	156.5	2	0	2	14	156.5
fraXS	156.5	2	0	2	14	156.5
fraTZ	156.5	2	0	2	14	156.5
haiXQN	156.5	2	0	2	14	156.5
haiMQN	156.5	2	0	2	14	156.5
haiBAN	156.5	2	0	2	14	156.5
hunXZN	156.5	2	0	2	14	156.5

LgCx	rank	correctYea	wrongYea	wrongNay	correctNay	coord1D
hunXQI	156.5	2	0	6	10	156.5
xuuPI	156.5	2	0	2	14	156.5
ckuXN	156.5	2	0	0	16	156.5
sesPDN	156.5	2	0	2	14	156.5
laoXQ	156.5	2	0	2	14	156.5
njoXQN	156.5	2	0	2	14	156.5
rusXQ	156.5	2	0	2	14	156.5
rusXIR	156.5	2	0	4	12	156.5
rusTI	156.5	2	0	2	14	156.5
sppXI	156.5	2	0	4	12	156.5
sppPI	156.5	2	0	2	14	156.5
taeXN	156.5	2	0	2	14	156.5
turXQ	156.5	2	0	2	14	156.5
kalXQ	156.5	2	0	2	14	156.5
agrED	240.5	0	0	2	14	240.5
apnXQ	240.5	0	0	2	14	240.5
apnE	240.5	0	0	2	14	240.5
ardE	240.5	0	0	4	12	240.5
ardER	240.5	0	0	2	14	240.5
arpED	240.5	0	0	2	14	240.5
arpPD	240.5	0	0	2	14	240.5
kwiE	240.5	0	0	0	16	240.5
kwiWA	240.5	0	0	2	14	240.5
bapXQZ	240.5	0	0	4	12	240.5
bapED	240.5	0	0	2	14	240.5
eusXRZ	240.5	0	0	4	12	240.5
eusXN	240.5	0	0	4	12	240.5
eusXZ	240.5	0	0	2	14	240.5
eusWRA	240.5	0	0	4	12	240.5
hboXQ	240.5	0	0	2	14	240.5
cavED	240.5	0	0	2	14	240.5
capED	240.5	0	0	2	14	240.5
capWA	240.5	0	0	2	14	240.5
croED	240.5	0	0	2	14	240.5
cupEPR	240.5	0	0	2	14	240.5
dowE	240.5	0	0	2	14	240.5
emeMQ	240.5	0	0	2	14	240.5
emeE	240.5	0	0	2	14	240.5
fonBA	240.5	0	0	2	14	240.5
fonXQ	240.5	0	0	2	14	240.5
fonED	240.5	0	0	2	14	240.5
fonWA	240.5	0	0	2	14	240.5

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LgCx	rank	correctYea	wrongYea	wrongNay	correctNay	coord1D
gniER	240.5	0	0	2	14	240.5
gniE	240.5	0	0	2	14	240.5
haiXZ	240.5	0	0	2	14	240.5
haiXQ	240.5	0	0	2	14	240.5
haiMZ	240.5	0	0	2	14	240.5
haiWA	240.5	0	0	2	14	240.5
hauX	240.5	0	0	2	14	240.5
imnER	240.5	0	0	2	14	240.5
imnBA	240.5	0	0	2	14	240.5
imnWA	240.5	0	0	2	14	240.5
itzED	240.5	0	0	2	14	240.5
itzE	240.5	0	0	2	14	240.5
dihXQ	240.5	0	0	2	14	240.5
dihPD	240.5	0	0	2	14	240.5
jaaED	240.5	0	0	2	14	240.5
jaaWAD	240.5	0	0	4	12	240.5
kkiX	240.5	0	0	0	16	240.5
kkiED	240.5	0	0	2	14	240.5
kkiWA	240.5	0	0	2	14	240.5
ketWA	240.5	0	0	2	14	240.5
xuuE	240.5	0	0	2	14	240.5
xuuPR	240.5	0	0	2	14	240.5
kioER	240.5	0	0	2	14	240.5
kioBA	240.5	0	0	2	14	240.5
kssXQZ	240.5	0	0	4	12	240.5
kssER	240.5	0	0	2	14	240.5
ckuED	240.5	0	0	2	14	240.5
ckuWA	240.5	0	0	2	14	240.5
kkkED	240.5	0	0	2	14	240.5
kkkWA	240.5	0	0	2	14	240.5
yuxXQ	240.5	0	0	2	14	240.5
yuxE	240.5	0	0	2	14	240.5
yuxWAD	240.5	0	0	4	12	240.5
sesXQ	240.5	0	0	2	14	240.5
sesED	240.5	0	0	2	14	240.5
sesPD	240.5	0	0	2	14	240.5
thdE	240.5	0	0	2	14	240.5
thdWA	240.5	0	0	2	14	240.5
xwaWA	240.5	0	0	2	14	240.5
kwoED	240.5	0	0	2	14	240.5
kwoBA	240.5	0	0	4	12	240.5
lajED	240.5	0	0	2	14	240.5

LgCx	rank	correctYea	wrongYea	wrongNay	correctNay	coord1D
lajWA	240.5	0	0	2	14	240.5
lvkXQ	240.5	0	0	2	14	240.5
lezXZ	240.5	0	0	2	14	240.5
lezXQ	240.5	0	0	2	12	240.5
lezER	240.5	0	0	2	14	240.5
lezWA	240.5	0	0	2	14	240.5
myhE	240.5	0	0	2	14	240.5
myhWA	240.5	0	0	2	14	240.5
mleX	240.5	0	0	2	14	240.5
mleP	240.5	0	0	2	14	240.5
mleWA	240.5	0	0	2	14	240.5
mpcXQ	240.5	0	0	2	14	240.5
mpcBA	240.5	0	0	2	14	240.5
mpcWAD	240.5	0	0	4	12	240.5
mybXZ	240.5	0	0	2	14	240.5
mybED	240.5	0	0	2	14	240.5
mybXQ	240.5	0	0	2	14	240.5
mybWA	240.5	0	0	2	14	240.5
njoED	240.5	0	0	2	14	240.5
njoE	240.5	0	0	0	16	240.5
casE	240.5	0	0	2	14	240.5
hurXQZ	240.5	0	0	4	12	240.5
hurE	240.5	0	0	2	14	240.5
hurTPD	240.5	0	0	2	14	240.5
hurEZ	240.5	0	0	4	12	240.5
wybER	240.5	0	0	2	14	240.5
wybP	240.5	0	0	2	14	240.5
wybWA	240.5	0	0	2	14	240.5
nivWBA	240.5	0	0	2	14	240.5
nivBWA	240.5	0	0	2	14	240.5
opmE	240.5	0	0	2	14	240.5
puiXQ	240.5	0	0	2	14	240.5
puiEDZ	240.5	0	0	4	12	240.5
puiTDZ	240.5	0	0	4	12	240.5
puiWA	240.5	0	0	2	14	240.5
qxsEA	240.5	0	0	2	14	240.5
qxsB	240.5	0	0	2	14	240.5
qxsWA	240.5	0	0	2	14	240.5
saeXQ	240.5	0	0	2	14	240.5
saeE	240.5	0	0	2	14	240.5
saeWA	240.5	0	0	2	14	240.5
szaXZ	240.5	0	0	4	12	240.5

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LgCx	rank	correctYea	wrongYea	wrongNay	correctNay	coord1D
sheXZ	240.5	0	0	4	12	240.5
sheED	240.5	0	0	2	14	240.5
poiED	240.5	0	0	2	14	240.5
denXQ	240.5	0	0	2	14	240.5
denE	240.5	0	0	2	14	240.5
csoED	240.5	0	0	2	14	240.5
csoBA	240.5	0	0	2	14	240.5
csoPR	240.5	0	0	2	14	240.5
sppER	240.5	0	0	2	14	240.5
sppP	240.5	0	0	2	14	240.5
taeED	240.5	0	0	2	14	240.5
taeBAD	240.5	0	0	4	12	240.5
taeWA	240.5	0	0	2	14	240.5
tweX	240.5	0	0	2	14	240.5
tweED	240.5	0	0	2	14	240.5
twePD	240.5	0	0	2	14	240.5
tweWA	240.5	0	0	2	14	240.5
triER	240.5	0	0	2	14	240.5
turED	240.5	0	0	4	12	240.5
turXQZ	240.5	0	0	4	12	240.5
turWA	240.5	0	0	2	14	240.5
udeBD	240.5	0	0	2	14	240.5
udePD	240.5	0	0	2	14	240.5
udeE	240.5	0	0	2	14	240.5
udeWA	240.5	0	0	2	14	240.5
udeWAR	240.5	0	0	4	12	240.5
engX	315.5	0	0	2	16	315.5
engXQ	315.5	0	0	2	16	315.5
engTW	315.5	0	0	2	16	315.5
fraBIR	315.5	0	0	6	12	315.5
fraWA	315.5	0	0	2	16	315.5
jpnPD	315.5	0	0	2	16	315.5
xuuXQ	315.5	0	0	4	14	315.5
tszWA	315.5	0	0	2	16	315.5
somXQ	315.5	0	0	4	14	315.5
tglEDA	315.5	0	0	4	14	315.5
tglTZ	315.5	0	0	2	16	315.5
tglWA	315.5	0	0	2	16	315.5
arpTI	341	2	0	0	14	341
aatXQI	341	2	0	4	10	341
aatXI	341	2	0	2	12	341
eusERI	341	2	0	2	12	341

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LgCx	rank	correctYea	wrongYea	wrongNay	correctNay	coord1D
eusXN	341	2	0	0	14	341
eusTI	341	2	0	0	16	341
hboXI	341	2	0	0	14	341
gupEIR	341	2	0	2	12	341
gupBI	341	2	0	0	14	341
emeED	341	2	0	2	12	341
engED	341	2	0	2	14	341
engPR	341	2	0	2	14	341
engXQI	341	2	0	2	14	341
fraTRN	341	2	0	4	12	341
fraTED	341	2	0	4	12	341
hunER	341	2	0	2	12	341
hunTPI	341	2	0	0	16	341
itzPED	341	2	0	2	12	341
itzPI	341	2	0	2	12	341
itzTI	341	2	0	0	14	341
jpnBDI	341	2	0	4	12	341
kanTI	341	2	0	0	14	341
kioBI	341	2	0	0	14	341
yuxPID	341	2	0	2	12	341
yuxTI	341	2	0	0	14	341
sesTI	341	2	0	0	14	341
laoPI	341	2	0	0	14	341
mleBWR	341	2	0	2	12	341
puiEDI	341	2	0	2	12	341
rusTEN	341	2	0	0	16	341
shePED	341	2	0	2	12	341
sheTI	341	2	0	0	14	341
sheWAI	341	2	0	2	12	341
somPI	341	2	0	2	12	341
somTI	341	2	0	0	16	341
somWAI	341	2	0	2	14	341
twePI	341	2	0	2	12	341
udeEDI	341	2	0	2	12	341
udePI	341	2	0	0	14	341

APPENDIX G: TWO-DIMENSIONAL RANKING FOR THE SECOND MDS

ANALYSIS

Following are the results of the two-dimensional ranking for the second MDS analysis (see Chapter 5). The constructions are identified by their codes (see Appendix 5) and ordered accordign to their rank. For a complete explanation of the values, the reader is referred to Poole (2005).

LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
arpXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
kwiXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
gupXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
itzXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
ketXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
kioXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
thdXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
laoEQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
mleXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
casPQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
opmXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
szaXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
poiXQ	7	4	0	0	12	0.501000047	-0.676941898	-0.659316991
thdXQL	15	6	0	0	10	0.501000047	-0.676941898	1.03E-16
turXLQ	15	8	0	0	10	0.501000047	-0.676941898	1.03E-16
udeXLQ	15	6	0	0	10	0.501000047	-0.676941898	1.03E-16
mleXLZ	17	6	2	0	8	0.378000021	-0.654512574	0.117749538
ardXLN	30	6	0	0	12	0.014	-0.486020241	6.94E-17
arpEL	30	4	0	0	12	0.166000009	-0.486020241	6.94E-17
eusXL	30	4	0	0	12	0.048000004	-0.486020241	6.94E-17
hboEL	30	4	0	0	12	0.004	-0.486020241	6.94E-17
croEPL	30	4	0	0	12	0.012	-0.486020241	6.94E-17
fonPL	30	4	0	0	12	0.037	-0.486020241	6.94E-17
hauEL	30	4	0	0	12	0.115000002	-0.486020241	6.94E-17
hauPL	30	4	0	0	12	0.024	-0.486020241	6.94E-17
hauXEL	30	4	0	0	12	0.046000004	-0.486020241	6.94E-17
hauXL	30	4	0	0	12	0.013	-0.486020241	6.94E-17
imnXL	30	4	0	0	12	0.042000003	-0.486020241	6.94E-17
itzXLN	30	6	0	0	12	0.076000005	-0.486020241	6.94E-17
xwaEL	30	4	0	0	12	0.032000002	-0.486020241	6.94E-17

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LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
lvkPL	30	4	0	0	12	0.023000002	-0.486020241	6.94E-17
arnMXL	30	4	0	0	12	0.095000006	-0.486020241	6.94E-17
mybPL	30	4	0	0	12	0.059000004	-0.486020241	6.94E-17
casX	30	4	0	0	12	0.026000001	-0.486020241	6.94E-17
hurML	30	4	0	0	12	0.031000001	-0.486020241	6.94E-17
wybEL	30	4	0	0	12	0.005	-0.486020241	6.94E-17
rusXL	30	6	0	0	12	0.038000003	-0.486020241	6.94E-17
tglXL	30	4	0	0	12	0.020000001	-0.486020241	6.94E-17
triEL	30	4	0	0	12	0.018000001	-0.486020241	6.94E-17
triXL	30	4	0	0	12	0.016000001	-0.486020241	6.94E-17
tpyEL	30	4	0	0	12	0.012	-0.486020241	6.94E-17
udeXLO	30	4	0	0	12	0.007	-0.486020241	6.94E-17
szaELI	43	4	0	2	10	0.030000001	-0.472257757	-0.009687332
jpnTI	44	2	2	0	14	0.501000047	-0.390085039	0.099168443
agrMRL	47.5	2	0	2	12	0.501000047	-0.373515874	0.097761248
hauTLI	47.5	2	0	2	12	0.501000047	-0.373515874	0.097761248
hunXLI	47.5	4	0	2	12	0.501000047	-0.373515874	0.097761248
kwoXLQ	47.5	2	0	4	10	0.501000047	-0.373515874	0.097761248
taeMLD	47.5	2	0	2	12	0.501000047	-0.373515874	0.097761248
turMR	47.5	2	0	2	12	0.501000047	-0.373515874	0.097761248
agrML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
agrMTL	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
eusXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
hboTPL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
cavMXC	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
capML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
capML2	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
croML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
croXLN	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
fonML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
gniML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
haiML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
haiTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
haiXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
jaaML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
jaaMXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
jaaXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
ketMLN	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
ketTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
kioML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
kioPTL	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17

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LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
kssXS	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
ckuXNL	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
kkkXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
yuxML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
sesPL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
thdML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
thdTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
xwaML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
xwaXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
lvkEL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
lvkTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
lezML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
lezXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
myhML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
arnWL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
mybML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
njoML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
wybML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
wybXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
nivML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
opmPTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
opmTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
puiML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
puiXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
tszMXL	80.5	4	0	0	14	0.501000047	-0.337211258	4.81E-17
qxsML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
saeTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
szaML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
denML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
csoMXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
sppTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
triBL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
triML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
tpyTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
udeML	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
udeTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
udeXL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
udeXPT	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
kalTL	80.5	2	0	0	14	0.501000047	-0.337211258	4.81E-17
arpMLZ	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
bapMLZ	116	4	0	0	12	0.501000047	-0.337211258	0.46082239

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LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
fraTLZ	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
haiXZL	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
jaaXZL	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
xwaXLZ	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
lvkMLZ	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
taeXLZ	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
kalEL	116	4	0	0	12	0.501000047	-0.337211258	0.46082239
kalMLZ	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
kalXLZ	116	6	0	0	12	0.501000047	-0.337211258	0.46082239
haiXLQ	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
jpnXQL	126.5	6	2	0	10	0.501000047	-0.291136362	-0.137601989
kanXIQ	126.5	4	2	2	8	0.501000047	-0.291136362	-0.137601989
xwaXIL	126.5	4	2	2	8	0.501000047	-0.291136362	-0.137601989
xwaXLQ	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
lajXLQ	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
wybXQL	126.5	4	2	2	8	0.501000047	-0.291136362	-0.137601989
opmXQL	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
tpyXQL	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
kalXQL	126.5	4	2	0	10	0.501000047	-0.291136362	-0.137601989
eusXN	133	2	0	2	12	0.080000006	-0.27807258	-0.146373275
szaXZ	133	2	0	2	12	0.010000001	-0.27807258	-0.146373275
sheXZ	133	2	0	2	12	0.006000001	-0.27807258	-0.146373275
engX	135	2	2	0	14	0.016000001	-0.278068875	-0.146375889
taeXN	136	4	0	0	14	0.023000002	-0.162803758	-0.227510478
myhE	137	2	0	0	14	0.004	-0.161244348	-0.228608174
yuxE	138	2	0	0	14	0.010000001	-0.161128808	-0.228689502
xuuE	139	2	0	0	14	0.005	-0.160871689	-0.228870486
wybP	140	2	0	0	14	0.005	-0.160830834	-0.228899244
udeE	141	2	0	0	14	0.007	-0.160719295	-0.228977756
tweX	142	2	0	0	14	0.003	-0.160696302	-0.228993941
thdE	143	2	0	0	14	0.005	-0.160348096	-0.229239041
sppP	144	2	0	0	14	0.002	-0.160251329	-0.229307155
saeE	145	2	0	0	14	0.003	-0.159950151	-0.229519152
qxsB	146	2	0	0	14	0.006	-0.159841479	-0.229595646
opmE	147	2	0	0	14	0.002	-0.159688328	-0.229703448
mleX	148	2	0	0	14	0.027000001	-0.159456636	-0.229866535
mleP	149	2	0	0	14	0.015000001	-0.159436225	-0.229880902
itzE	150	2	0	0	14	0.002	-0.158750687	-0.230363449
hurE	151	2	0	0	14	0.002	-0.158612574	-0.230460666
hauX	152	2	0	0	14	0.026000001	-0.158547995	-0.230506123
gniE	153	2	0	0	14	0.004	-0.158408111	-0.230604587

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LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
emeE	154	2	0	0	14	0.003	-0.158028733	-0.230871629
denE	155	2	0	0	14	0.002	-0.157920691	-0.23094768
casE	156	2	0	0	14	0.003	-0.15781631	-0.231021152
apnE	157	2	0	0	14	0.002	-0.157672637	-0.231122284
aatTN	159.5	2	0	0	16	0.426000029	-0.020737163	2.79E-18
engTN	159.5	2	0	0	16	0.428000033	-0.020737163	2.79E-18
engXN	159.5	2	0	0	16	0.427000016	-0.020737163	2.79E-18
ckuXN	159.5	2	0	0	16	0.42900002	-0.020737163	2.79E-18
haiMQN	164	4	0	0	14	0.007	-0.020737163	-0.327510633
haiXQN	164	4	0	0	14	0.029000001	-0.020737163	-0.327510633
njoXQN	164	4	0	0	14	0.110000007	-0.020737163	-0.327510633
turXQ	164	4	0	0	14	0.003	-0.020737163	-0.327510633
kalXQ	164	4	0	0	14	0.025	-0.020737163	-0.327510633
fraPLZ	167	4	2	0	12	0.501000047	-0.017206116	0.470324736
triTIM	168	4	0	4	8	0.501000047	-0.01720251	0.470319332
dowXZ	170.5	2	0	2	14	0.41900003	-0.011794917	-0.016480229
engXR	170.5	2	0	2	14	0.438000023	-0.011794917	-0.016480229
fraTZ	170.5	2	0	2	14	0.393000007	-0.011794917	-0.016480229
hunXZN	170.5	2	0	2	14	0.408000022	-0.011794917	-0.016480229
eusXQZ	173	4	0	2	12	0.017000001	-0.010983773	-0.334376005
xwaTL	174	4	0	0	12	0.104000002	0.089264056	0.487021651
tpyTEA	175	4	0	0	12	0.106000006	0.089287958	0.487058984
tpyBA	176	4	0	0	12	0.099000007	0.089300842	0.487079107
tpyWAL	177	4	0	0	12	0.106000006	0.08930412	0.487084228
cupWAL	178	4	0	0	12	0.106000006	0.089347743	0.487152362
cupMXL	179	4	0	0	12	0.102000006	0.089363557	0.487177062
engXQ	181	2	2	0	14	0.006	0.099149037	-0.411898044
xuuXQ	181	2	2	2	12	0.007	0.099149037	-0.411898044
somXQ	181	2	2	2	12	0.004	0.099149037	-0.411898044
bapXQZ	184.5	2	0	2	12	0.004	0.09920354	-0.411936464
kssXQZ	184.5	2	0	2	12	0.013	0.09920354	-0.411936464
hurXQZ	184.5	2	0	2	12	0.005	0.09920354	-0.411936464
turXQZ	184.5	2	0	2	12	0.047000002	0.09920354	-0.411936464
apnXQ	194	2	0	0	14	0.006	0.100909203	-0.413200486
hboXQ	194	2	0	0	14	0.027000001	0.100909203	-0.413200486
emeMQ	194	2	0	0	14	0.004	0.100909203	-0.413200486
fonXQ	194	2	0	0	14	0.011000001	0.100909203	-0.413200486
haiXQ	194	2	0	0	14	0.013	0.100909203	-0.413200486
dihXQ	194	2	0	0	14	0.004	0.100909203	-0.413200486
yuxXQ	194	2	0	0	14	0.010000001	0.100909203	-0.413200486
sesXQ	194	2	0	0	14	0.006	0.100909203	-0.413200486

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LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
lvkXQ	194	2	0	0	14	0.041000001	0.100909203	-0.413200486
lezXQ	194	2	0	0	12	0.003	0.100909203	-0.413200486
mpcXQ	194	2	0	0	14	0.002	0.100909203	-0.413200486
mybXQ	194	2	0	0	14	0.013	0.100909203	-0.413200486
puiXQ	194	2	0	0	14	0.016000001	0.100909203	-0.413200486
saeXQ	194	2	0	0	14	0.009000001	0.100909203	-0.413200486
denXQ	194	2	0	0	14	0.008	0.100909203	-0.413200486
aatXQI	202	3	0	3	10	0.002	0.101079946	-0.413257326
aatXI	204.5	4	2	0	10	0.501000047	0.101132361	-0.413838203
itzPI	204.5	4	2	0	10	0.501000047	0.101132361	-0.413838203
somPI	204.5	4	2	0	10	0.501000047	0.101132361	-0.413838203
twePI	204.5	4	2	0	10	0.501000047	0.101132361	-0.413838203
eusXRZ	209.5	0	0	4	12	0.417000026	0.108053635	0.005152722
gniEPT	209.5	0	0	2	14	0.423000008	0.108053635	0.005152722
imnER	209.5	0	0	2	14	0.414000034	0.108053635	0.005152722
lezXZ	209.5	0	0	2	14	0.421000034	0.108053635	0.005152722
sppER	209.5	0	0	2	14	0.41200003	0.108053635	0.005152722
triER	209.5	0	0	2	14	0.423000008	0.108053635	0.005152722
kioER	213.5	0	0	2	14	0.413000017	0.108053635	0.005152722
mybXZ	213.5	0	0	2	14	0.423000008	0.108053635	0.005152722
ardER	220	0	0	2	14	0.408000022	0.108053635	0.005152722
eusXZ	220	0	0	2	14	0.410000026	0.108053635	0.005152722
cupEPR	220	0	0	2	14	0.410000026	0.108053635	0.005152722
haiMZ	220	0	0	2	14	0.407000005	0.108053635	0.005152722
haiXZ	220	0	0	2	14	0.398000032	0.108053635	0.005152722
xuuPR	220	0	0	2	14	0.418000013	0.108053635	0.005152722
kssER	220	0	0	2	14	0.421000034	0.108053635	0.005152722
lezER	220	0	0	2	14	0.407000005	0.108053635	0.005152722
hurEZ	220	0	0	4	12	0.423000008	0.108053635	0.005152722
wybER	220	0	0	2	14	0.404000014	0.108053635	0.005152722
csoPR	220	0	0	2	14	0.404000014	0.108053635	0.005152722
kwiWA	241.5	2	0	0	14	0.119000003	0.116687642	0.408517845
capWA	241.5	2	0	0	14	0.139000013	0.116687642	0.408517845
fonBA	241.5	2	0	0	14	0.138000011	0.116687642	0.408517845
fonWA	241.5	2	0	0	14	0.141000003	0.116687642	0.408517845
haiWA	241.5	2	0	0	14	0.114000008	0.116687642	0.408517845
imnBA	241.5	2	0	0	14	0.137000009	0.116687642	0.408517845
imnWA	241.5	2	0	0	14	0.127000004	0.116687642	0.408517845
kkiWA	241.5	2	0	0	14	0.140000001	0.116687642	0.408517845
ketWA	241.5	2	0	0	14	0.131000012	0.116687642	0.408517845
kioBA	241.5	2	0	0	14	0.125	0.116687642	0.408517845

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LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
ckuWA	241.5	2	0	0	14	0.124000005	0.116687642	0.408517845
kkkWA	241.5	2	0	0	14	0.116000004	0.116687642	0.408517845
thdWA	241.5	2	0	0	14	0.128000006	0.116687642	0.408517845
xwaWA	241.5	2	0	0	14	0.116000004	0.116687642	0.408517845
lajWA	241.5	2	0	0	14	0.123000003	0.116687642	0.408517845
lezWA	241.5	2	0	0	14	0.136000007	0.116687642	0.408517845
myhWA	241.5	2	0	0	14	0.139000013	0.116687642	0.408517845
mleWA	241.5	2	0	0	14	0.138000011	0.116687642	0.408517845
mpcBA	241.5	2	0	0	14	0.135000005	0.116687642	0.408517845
mybWA	241.5	2	0	0	14	0.129000008	0.116687642	0.408517845
wybWA	241.5	2	0	0	14	0.134000003	0.116687642	0.408517845
nivBWA	241.5	2	0	0	14	0.131000012	0.116687642	0.408517845
nivWBA	241.5	2	0	0	14	0.133000001	0.116687642	0.408517845
puiWA	241.5	2	0	0	14	0.140000001	0.116687642	0.408517845
qxsEA	241.5	2	0	0	14	0.139000013	0.116687642	0.408517845
qxsWA	241.5	2	0	0	14	0.134000003	0.116687642	0.408517845
saeWA	241.5	2	0	0	14	0.131999999	0.116687642	0.408517845
csoBA	241.5	2	0	0	14	0.131999999	0.116687642	0.408517845
taeWA	241.5	2	0	0	14	0.142000005	0.116687642	0.408517845
tweWA	241.5	2	0	0	14	0.138000011	0.116687642	0.408517845
turWA	241.5	2	0	0	14	0.123000003	0.116687642	0.408517845
udeWA	241.5	2	0	0	14	0.138000011	0.116687642	0.408517845
kwiE	259	0	0	0	16	0.407000005	0.116687642	-1.95E-17
kkiX	259	0	0	0	16	0.406000018	0.116687642	-1.95E-17
njoE	259	0	0	0	16	0.413000017	0.116687642	-1.95E-17
arpTI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
eusXN	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
hboXI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
gupBI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
itzTI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
kanTI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
kioBI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
yuxTI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
sesTI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
laoPI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
sheTI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
udePI	266.5	2	0	0	14	0.501000047	0.116687642	-0.408822254
fraXS	275	4	0	0	14	0.024	0.121208344	0.406454348
fraXZ	275	4	0	0	14	0.020000001	0.121208344	0.406454348
haiBAN	275	4	0	0	14	0.020000001	0.121208344	0.406454348
rusTI	275	4	0	0	14	0.025	0.121208344	0.406454348

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LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
rusXQ	275	4	0	0	14	0.025	0.121208344	0.406454348
jpnWAL	278	4	0	0	14	0.107000008	0.130014611	0.543825824
aatTIN	281	4	0	0	14	0.082000002	0.133114115	-0.413238228
engXIN	281	4	0	0	14	0.077000007	0.133114115	-0.413238228
xuuPI	281	4	0	0	14	0.066	0.133114115	-0.413238228
laoXQ	281	4	0	0	14	0.081	0.133114115	-0.413238228
sppPI	281	4	0	0	14	0.079000004	0.133114115	-0.413238228
hunXQI	284	6	0	2	10	0.006000001	0.133951484	-0.436395521
sppXI	285	6	2	0	10	0.501000047	0.13965666	-0.571013429
engXIN	286.5	4	0	2	12	0.074000001	0.140843689	-0.415307031
rusXIR	286.5	4	0	2	12	0.079000004	0.140843689	-0.415307031
engTW	289.5	2	0	0	16	0.093000002	0.169126046	0.406454348
fraWA	289.5	2	0	0	16	0.097000003	0.169126046	0.406454348
tszWA	289.5	2	0	0	16	0.079000004	0.169126046	0.406454348
tglWA	289.5	2	0	0	16	0.095000006	0.169126046	0.406454348
tglTZ	292	0	0	2	16	0.377000004	0.267763207	0.043298344
eusTI	294.5	2	0	0	16	0.501000047	0.284848853	-0.362200046
hunTPI	294.5	2	0	0	16	0.501000047	0.284848853	-0.362200046
rusTN	294.5	2	0	0	16	0.501000047	0.284848853	-0.362200046
somTI	294.5	2	0	0	16	0.501000047	0.284848853	-0.362200046
engXQI	297	4	0	0	14	0.131000012	0.284848853	-0.542611547
jaaWAD	301	4	0	0	12	0.334000021	0.424801861	0.483436069
yuxWAD	301	4	0	0	12	0.335000008	0.424801861	0.483436069
kwoBA	301	4	0	0	12	0.32100001	0.424801861	0.483436069
mpcWAD	301	4	0	0	12	0.336000025	0.424801861	0.483436069
tglEDA	301	4	0	0	14	0.335000008	0.424801861	0.483436069
taeBAD	301	4	0	0	12	0.333000004	0.424801861	0.483436069
turED	301	4	0	0	12	0.327000022	0.424801861	0.483436069
agrED	320	2	0	0	14	0.326000005	0.424801861	-6.85E-17
arpED	320	2	0	0	14	0.389000028	0.424801861	-6.85E-17
arpPD	320	2	0	0	14	0.367000014	0.424801861	-6.85E-17
bapED	320	2	0	0	14	0.366000026	0.424801861	-6.85E-17
cavED	320	2	0	0	14	0.332000017	0.424801861	-6.85E-17
capED	320	2	0	0	14	0.307000011	0.424801861	-6.85E-17
croED	320	2	0	0	14	0.378000021	0.424801861	-6.85E-17
dowE	320	2	0	0	14	0.376000017	0.424801861	-6.85E-17
fonED	320	2	0	0	14	0.278000027	0.424801861	-6.85E-17
itzED	320	2	0	0	14	0.376000017	0.424801861	-6.85E-17
dihPD	320	2	0	0	14	0.378000021	0.424801861	-6.85E-17
jpnPD	320	2	0	0	16	0.353000015	0.424801861	-6.85E-17
jaaED	320	2	0	0	14	0.296000004	0.424801861	-6.85E-17

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LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
kkiED	320	2	0	0	14	0.372000009	0.424801861	-6.85E-17
ckuED	320	2	0	0	14	0.307000011	0.424801861	-6.85E-17
kkkED	320	2	0	0	14	0.368000031	0.424801861	-6.85E-17
sesED	320	2	0	0	14	0.389000028	0.424801861	-6.85E-17
sesPD	320	2	0	0	14	0.357000023	0.424801861	-6.85E-17
kwoED	320	2	0	0	14	0.388000011	0.424801861	-6.85E-17
lajED	320	2	0	0	14	0.362000018	0.424801861	-6.85E-17
mybED	320	2	0	0	14	0.248000011	0.424801861	-6.85E-17
njoED	320	2	0	0	14	0.346000016	0.424801861	-6.85E-17
hurTPD	320	2	0	0	14	0.335000008	0.424801861	-6.85E-17
sheED	320	2	0	0	14	0.366000026	0.424801861	-6.85E-17
poiED	320	2	0	0	14	0.333000004	0.424801861	-6.85E-17
csoED	320	2	0	0	14	0.313000023	0.424801861	-6.85E-17
taeED	320	2	0	0	14	0.356000006	0.424801861	-6.85E-17
tweED	320	2	0	0	14	0.338000029	0.424801861	-6.85E-17
twePD	320	2	0	0	14	0.388000011	0.424801861	-6.85E-17
udeBD	320	2	0	0	14	0.341000021	0.424801861	-6.85E-17
udePD	320	2	0	0	14	0.377000004	0.424801861	-6.85E-17
jpnED	337	2	0	2	14	0.291000009	0.461567318	0.13687717
puiEDZ	337	2	0	2	12	0.263000011	0.461567318	0.13687717
puiTDZ	337	2	0	2	12	0.256000012	0.461567318	0.13687717
sesPDN	339	2	0	2	14	0.295000017	0.463564588	0.137524235
fraBIR	340	6	2	0	10	0.136000007	0.476255601	0.743761358
engED	341	2	0	2	14	0.403000027	0.488091048	-0.429756516
emeED	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
hunER	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
itzPED	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
yuxPID	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
puiEDI	345	4	0	0	12	0.472000033	0.519381298	-7.89E-17
shePD	345	4	0	0	12	0.425000012	0.519381298	-7.89E-17
udeEDI	345	4	0	0	12	0.501000047	0.519381298	-7.89E-17
fraTED	349	4	0	2	12	0.501000047	0.528245615	-0.038852256
somWAI	350	4	2	0	12	0.005	0.574546985	0.180361091
sheWAI	351	4	2	0	10	0.004	0.575205385	0.179693079
jpnBDI	352	4	2	2	10	0.006000001	0.576292217	0.182278837
ardE	354	4	2	0	10	0.346000016	0.663921995	0.462736038
eusWRA	354	4	2	0	10	0.350000024	0.663921995	0.462736038
udeWAR	354	4	2	0	10	0.343000025	0.663921995	0.462736038
fraTRN	356	4	0	2	12	0.079000004	0.723769319	-0.601140112
engPR	357	4	0	0	14	0.091000006	0.739759986	-0.634135662
eusERI	358	4	0	0	12	0.073000006	0.739908902	-0.634557034

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LgCx	rank	correct Yea	wrong Yea	wrong Nay	correct Nay	volume	coord1D	coord2D
gupEIR	359	4	0	0	12	0.085000001	0.739911055	-0.634563125
mleBWR	360	4	0	0	12	0.097000003	0.739919906	-0.634588169

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