

# Linguistic Theory and Empirical Evidence

EDITED BY

Bob de Jonge  
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*John Benjamins Publishing Company*

## Linguistic Theory and Empirical Evidence

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### **Volume 64**

Linguistic Theory and Empirical Evidence

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# Table of contents

Introduction: Linguistic theory and empirical evidence <i>Bob de Jonge</i>	1
<b>PART I. Independent evidence in grammar</b>	
The distribution of linguistic forms and textual structure: Two sign-oriented approaches to the textual analysis of the use of the French Indicative and Subjunctive <i>Igor Dreer</i>	17
Semantic regularities of the so-called irregular Internal Vowel Alternation (IVA) nominal ( <i>umlaut</i> ) and verbal ( <i>ablaut</i> ) forms in Old and Modern English <i>Elena Even-Simkin &amp; Yishai Tobin</i>	45
<i>Al hablar, se alterna hablando</i> : Syntactic variation between two non-finite Spanish constructions <i>Bob de Jonge</i>	83
Instructional meanings, iconicity, and <i>l'arbitraire du signe</i> in the analysis of the Afrikaans demonstratives <i>Robert S. Kirsner</i>	97
Focus system of the Japanese benefactive auxiliaries <i>kureru</i> and <i>morau</i> <i>Hidemi Riggs</i>	139
<b>PART II. Phonology as human behavior</b>	
Phonology as human behavior from an evolutionary point of view <i>Yishai Tobin</i>	169
Phonology as human behavior: The prosody of normal and pathological speech of Buenos Aires Spanish <i>Claudia Enbe &amp; Yishai Tobin</i>	197
Phonology as human behavior: 'Non-Vocalization' – A phonological error process in the speech of severely and profoundly hearing impaired adults – from the point of view of the theory of phonology as human behavior <i>Orly Halpern &amp; Yishai Tobin</i>	219

Phonology as human behavior: Comparing and contrasting phonological processes in adult dysarthria and first language acquisition	245
<i>Monika Polczyńska &amp; Yishai Tobin</i>	
A phonological analysis of the lexicon of a literary work	267
<i>Inessa Roe-Portiansky &amp; Yishai Tobin</i>	
Name index	293
Subject index	295

# Introduction

## Linguistic theory and empirical evidence

Bob de Jonge

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*The relation between many linguistic, or otherwise psychological observations is unclear, not even demonstrable. A proposal to formalize (a 'generative grammar') the subconscious observations discovered by Freud and their influence on human behavior is eventually possible.*

*Freud has caused the greatest revolution in ages in Western thinking. He was certainly aware of this fact. 'But' he generously claims, 'my work is scientific'. In this confusion of tongues, it may be wished that linguistics never become a science.*

Balk-Smit Duyzentkunst (1974: 16) [translation mine]

This introduction is meant to present the main theme of this book: the necessity of independent, objective demonstrations for linguistic analysis. It will compare and contrast different traditions in the demonstration of hypotheses within linguistics and try to define which kinds of demonstrations are considered to be independent and which are not. Finally, a short overview of the chapters will be given establishing their relationships to the general theme of the volume.

### 1. Introduction<sup>1</sup>

Intellectuals will not have any problem in stating that Sigmund Freud has been very important for (psychological) science as it is today. However, scientific methods have changed enormously over the last century. Whereas Freud depended largely on introspection, i.e. he based his hypotheses mainly on his own experiences and his own interpretations of them, nowadays social sciences generally reject this working method and use diverse kinds of observations and objective techniques to corroborate findings, a method typically used in the 'hard' sciences.

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1. I am indebted to two anonymous readers of this volume for their comments on this article, and especially to Yishai Tobin for helpful comments and corrections in my English. All remaining flaws and errors are my own responsibility.



It is surprising that one of the oldest sciences, the study of languages and literatures, has advanced so relatively little in the technical procedures of the validation of hypotheses. However, Columbia School (CS) Linguistics does have an empirical tradition that includes independent validation. It is the purpose of this volume to continue and elaborate further this empirical tradition and to offer a variety of empirical studies for many and diverse languages to enrich CS research and linguistic analysis in general.

## 2. Validation in linguistics

Traditionally, linguists describe and explain a particular phenomenon in a given language by studying intuitively contrived or carefully selected examples in order to demonstrate their postulated hypotheses. Contini-Morava (1995:23–24) describes this widely used method in the following way:

As evidence in support of a particular analysis, all sign-oriented linguists use the method of citing examples that illustrate a number of contextual interpretations of the signs being analyzed, and explaining how the various individual senses can be derived from the more abstract, general meanings that are being hypothesized, taken together with information from the linguistic and extralinguistic context [...].

Of course, this methodology has a major flaw: the analyst generally tries to illustrate his hypothesis by selecting those examples that fit the hypothesis best, and may therefore omit other examples that may possibly even contradict the hypothesis. So, it is uncertain if the examples are representative of the actual use and if the hypothesis is indeed the best means of explaining it. This is especially problematic from the point of view of other sciences. Diver (1995: 104) pertinently summarizes this shortcoming by stating that “The impression that the outsider gets, at the outset, is that this kind of judgment is hopelessly *ad hoc*.”

Moreover, grammarians generally accept exceptions to the rules established by their own hypotheses as common rather than something that requires explanation. Even worse, they may even claim that: “The exception proves the rule!” Thus, expectations of scientific rigor in linguistics have been disappointingly low, as Diver (1980: 5) pointed out:

If we no longer permit ourselves the luxury of rules that freely admit exceptions, procedures of verification must be raised well above the usual level to be found in linguistics.

It may be true that pure, genuine linguistic facts do not exist outside of theoretical frameworks (Reid 1995; Davis 2002, especially p. 75). However, are we justified to assume that the actual nature of the verification procedure also depends on the theoretical approach the linguist adopts?

Tobin (1990: 68–69) states this explicitly:

Every linguistic analysis is the direct result of a specific set of theoretical and methodological assumptions which are directly related to how the linguist:

1. defines language;
2. defines a linguistic problem;
3. determines the source, kind and amount of data to be selected and analyzed;
4. chooses a methodology to select and analyze the data;
5. evaluates, compares and contrasts analyses in light of all of the above.

These five criteria basically serve to describe how and what the particular linguist views as the goal of linguistic research.

Davis (2002: 66) also asserts that this is the case. He states that:

The appropriateness of any analytical technique must, of course, be evaluated in terms of the theoretical approach of which it is part. It is perfectly consistent with classical generative grammar to eschew quantitative data entirely (Chomsky 1957: 15–17). Grammaticality judgments on sentences as formal objects should not, in principle, depend at all on the discourse frequencies of those sentences, nor on their presence or absence in some corpus. Either the grammar generates a sentence's structure or it does not.

If we see what Chomsky has to say on this matter, we further note that he does mention analytical techniques, but rather discusses the construction of 'general laws' and 'hypothetical constructs' in relation to the observations:

(Chomsky 2002: 49): Any scientific theory is based on a finite number of observations, and it seeks to relate the observed phenomena and to predict new phenomena by constructing general laws in terms of hypothetical constructs such as (in physics, for example) "mass" and "electron".

The question remains: What are the hypothetical constructs in linguistics? Are these hypothetical constructs the phonemes and the phrases, just as Chomsky suggests? Just like there are more constructs than "mass" and "electron" in physics, "phrase" and "phoneme" may very well not be the only ones in language, but traditional generative grammar based on a syntactic-oriented deep structure, appears

not to have even considered, for example, anything related to meaning as possible constructs, the only concern related to meaning being how to eliminate ambiguity in syntax (Chomsky 2002: 85–91).<sup>2</sup>

So, the question if there is more to grammatical theory than phonemes and phrases/sentences becomes relevant here. And if so, what kind of construct is important, which are the relevant observations necessary to determine them and how are these phenomena being observed and analyzed?

It is important to state that linguistics is an empirical science, also in the view of generative grammar (Chomsky 2002: 53). So, observations made in order to construct a possible grammar is done in a “given corpus of utterances” (for instance, Chomsky 2002: 51 *inter alia*). But, unlike observations made in other sciences, no conditions are required for the corpus of utterances, other than that they be grammatical in the observed language, or that other utterances are unacceptable i.e. unable to appear in such a corpus. The main criterion for judging grammaticality and/or acceptability is by means of the introspection of the analyst him/herself if the language in question is his or her native language, or judgments made by other mother tongue informants. And then – lo and behold – we are back at the beginning: again, we are dealing with a selection of examples *sans* independent data collection nor observation mechanisms. Further development of the formal generative theory (neither parameter theory (Chomsky 1981), nor the Minimalist Program (Chomsky 1998, 2008)) has fundamentally changed this methodology.

It is the intention of this volume to underline the importance of and need for objective and independent data collection in linguistic science, as in all empirical sciences. Contrary to Davis (2002: 66), we do not think that the underlying theory may excuse for or justify the absence of independent validation of the hypothesis.<sup>3</sup> Of course, this is not new, for Columbia School Linguistics has a well-established tradition of using independent data to test hypotheses. As Diver (1975: 14) already stated at an early stage of the development of the CS:

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2. In the mid-seventies there was a movement led by James McCawley at the University of Chicago and Paul Postal to create a semantic-based deep structure in contrast to Chomsky's syntactic-based deep structure. The second editor of this volume was present at this syntactic-semantic deep structure debate held in a large auditorium with two entrances. The opposing sides sat together separated from each in each side of the auditorium and when the forum ended each side streamed out in the separate entrances/exits victoriously declaring that it had resoundingly vanquished the opposition.

3. There are, of course, other consequences that are related to the kind of hypotheses that are investigated and the constructs that are taken into consideration. However, we will leave this discussion for another occasion, concentrating here on the independent validation problem only.

Although in the long run large numbers of apt examples undoubtedly provide the most subjectively satisfying confirmation of a hypothesis, it is understandable that we should have gradually moved to more objective techniques [...].

Diver (1979) in his seminal article “Phonology as Human Behavior” showed that the distribution of phonemes in English is not random, using quantitative techniques that objectively supported his hypotheses relating distinctive phonological features to other aspects of human behaviour. Diver’s data are of a phonological nature, but he also hypothesized that meanings may be corroborated objectively:

Contini-Morava (1995:23–24): The Columbia School differs from the other schools, however, in that it does not confine its validation to the individual sentence, but also considers the relation between grammatical meaning and the “macro-level” discourse. This attention to discourse has led to another major difference between the Columbia School and other sign-oriented schools, its extensive reliance on quantitative methods of validation. This usually involves comparing two or more signs with contrasting meanings with respect to a set of contextual features that are expected to show a statistical skewing in favor of one or the other meaning. Demonstrating that the predicted skewing exists is taken as support for the meaning hypothesis.

The premise presented here introduces a strategy that measures independently and indirectly a hypothesized meaning by controlling correlations between the investigated forms and contextual features. One should note that the indirectness is especially important and implies that it is not the phenomenon itself that is being observed and measured, but its significant co-occurrence with other, objectively observable contextual elements that are exclusively explained by means of the hypothesis that is being tested. However, as Diver (1975: 15) already stated, there is a problem that needs further discussion:

With indirect strategies [...] we must depend entirely on *objective procedures* to demonstrate that there are elements in the context that justify the use of the meaning in particular cases. [emphasis added]

In the following section we will discuss the problem of objectivity associated with observed data.

### 3. Characteristics of objectively observable testing

The purpose of quantitative testing in (any) linguistic analysis is to provide independent evidence for the proposed hypothesis. However, in order to be considered

independent evidence, objectivity is needed. The fact that objectivity in turn may be a problem was also observed twenty years later by Diver (1995: 104):

One advantage of such a procedure would be that if it can be kept sufficiently objective, it might reduce some of the impression of *ad hoc* subjective judgment, although, to be sure, subjective judgment can never be entirely eliminated.

The question is, then, how these analytic tests can be kept ‘sufficiently objective’. According to Diver, the only observable phenomena are the sound waves (1995: 48–49). Put in other words, in linguistics, the only objectively observable facts are the physical forms of language.

In Diver’s view, all other observations, such as meaning, are the result of analysis and interpretation, and are therefore not objective. I think it can be sustained that as far as meaning is concerned, there is one phenomenon that represents them directly, i.e. the linguistic form of morphemes (and other overt linguistic signals), the minimal unit of meaning.<sup>4</sup> It is not meaning itself that can be observed, it is only its appearance, its form; but form can surely be observed objectively: all observations of linguistic forms can be repeated in a given corpus by different analysts using the same theoretical assumptions and methodolgical procedures, rendering the same results.

The same is not necessarily true for the testing method described above in which the co-occurrence of linguistic forms with other contextual elements is being observed. For example, in De Jonge 2000, an attempt was made to demonstrate the meaning of the simple past tense opposition between Spanish *indefinido* and *imperfecto*. The hypothesis was that *indefinido* indicates events in focus, and *imperfecto* describes supportive events. In one of the first tests, the distribution of both verb tenses was measured over actions that imply a movement (assumed to be more likely to be in focus) vs. the ones that do not (assumed to be more likely to be supportive, 2000: 241). In Table 1 we reproduce part of the relevant data:

**Table 1.** Distribution of *imperfecto* and *indefinido* over actions that imply a movement in the narrated scene and other actions, after De Jonge (2000: 241)

X <sup>2</sup> = 96.2 p < .001		Indefinido	Imperfecto
Totals of two stories by García Márquez	Movement	177/86%	30/14%
	Other	91/40%	138/60%

4. Of course, this line of reasoning only holds if we assume that there is a one-to-one relationship between form and meaning as explicitly advocated by Bolinger (1977).

As can be observed in Table 1, the expectations are confirmed by the data, since 86% of all *indefinido* forms can be characterized as a movement, and 60% of all *imperfecto* forms as a non-movement.

Although the absence or presence of movement associated with a verb might seem a fairly clear contextual feature that can indeed be measured, it is far from objective, for it depends basically on the interpretation of a particular context by the analyst. There is no objective way of telling that a verb like *to walk* implies a movement and *to see* not, other than relying on the generally accepted meanings. Should this case still be relatively easy to decide, things get more problematic when we think of verbs like *to laugh* or *to cry*. So, when another analyst wants to control this test by repeating it, s/he may not arrive at the same results as the original test.<sup>5</sup> But in order to test the hypothesis under study by means of the observation of contextual elements to justify the meaning, these contextual elements should be objectively observable as well.

Yet in spite of its subjectiveness, this kind of contextual testing is not useless, since it serves to further explain and elaborate the hypothesis, but it still cannot be taken as independent proof for the hypothesis. On the other hand, in De Jonge (2000), other tests were conducted where this objectivity is much clearer. For instance, when measuring the distribution of the above-mentioned verb tenses over main and subordinate clauses, it is not too complicated to define both clause types sufficiently in order to render the test repeatable by other researchers, with a guarantee of achieving the same results. The prediction is that, because events in focus are generally believed to occur more frequently in main clauses and supportive ones in subordinate clauses, *indefinido* should show a preference for main clauses and *imperfecto* for subordinate clauses. In Table 2 we give the results for this test, which are highly comparable to those of Table 1:

**Table 2.** Distribution of *imperfecto* and *indefinido* over over main clauses and subordinate clauses, after De Jonge (2000: 244)

$X^2 = 21.5 \text{ } p < .001$		Indefinido	Imperfecto
Totals of two stories by García Márquez	Main	236/67%	118/33%
	subord.	32/39%	50/61%

The results of Table 2 clearly confirm the expectations: in main clauses, 67% *indefinido* forms are observed and 61% *imperfecto* in subordinate clauses. The measurements of Table 2 are of an objective nature, since the distinction between main

5. However, it is likely that the generally observed tendencies will be similar when this test is executed by different researchers.

and subordinate clauses, in principle, is a straightforward question and the results can be replicated by different researchers.<sup>6</sup> Other examples of such objective testing may be found, for example, in Huffman (1997: 73, 75), where the distribution of French *lui* ('him, her, it') vs. a possessive adjective (*son/sa/ses* 'his, her, their') is measured with the absence vs. presence of other adjectives with body parts, as in *les larmes lui montèrent aux yeux* vs. *les larmes montèrent à ses propres yeux* 'tears rose (him) to (the)/his own eyes' (adapted from Huffman 1997: 73). but also in various instances of Reid 1977 and Kirsner 1979 and many other CS studies. For instance, Reid (1977: 321) measures the relation between *être* 'to be' vs. other verbs with *imparfait* vs. *passé simple*, two French verb forms with a similar opposition as the Spanish ones discussed above, in order to see if *être* occurs relatively more with *imparfait*. This is indeed observed and verified statistically, which is taken as evidence for the hypothesized LOW FOCUS meaning of the *imparfait*. Other objectively measured correlations are: negation/affirmation, (non) human subjects (1977: 322) etc., all providing the expected results. Kirsner (1979: 362), who discusses a difference in meaning between two Dutch demonstratives *deze* 'these' and *die* 'those', also takes (non-)humanness, singularity/plurality of the corresponding NP's, etc. as relevant factors to demonstrate the hypothesized difference in deixis.

Dreer (2007) is a more recent study where all kinds of objective correlations are measured. For instance, he measures correlations of French subjunctive vs. indicative mood in subordinate clauses with negation vs. affirmation in the main clause (2007: 152), which shows an expected preference of subjunctive in subordinates for negations in main clauses, being the result of the compatibility of the invariant meaning ALTERNATIVE of the subjunctive and an alternative (affirmative) outcome, implied by negation.

In other cases, however, the measurements may not be as objective as the examples indicated above, but nevertheless are or seem to be perfectly controllable. For example, in Huffman (1997: 66–8) the distribution of three pronoun types is measured over two verb groups. First, both a complete classification of the verbs into groups (rather than contexts) and a justification for this choice are given, making independent repetition of the test possible. However, there is no formal criterion in order to classify verbs into groups and although the justification in the cited study is crystal clear and the results of the test most convincing,

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6. We are aware of the fact that grammars do not always agree on which conjunctions are coordinate and which subordinate. However, if the analyst describes carefully how s/he classifies the measured feature on a formal basis, the results must be the same when repeated by other analysts.

for real independent testing it would be preferable to have objectively observable characteristics in all testing procedures.<sup>7</sup>

The major problem with objective testing is that although the procedure is controllable, the interpretations of its results are not. So, the only thing that we can rely on is that the observation is objectively accurate, but the implications of what is observed will depend on the researcher:

Diver (1995: 110): One danger in making predictions for quantitative procedures should be pointed out. What might be thought of as a perfectly “logical” prediction from the hypothesis may turn out not to be true at all. We can exercise our ingenuity to invent ways to take communicative advantage of a particular meaning, but the actual users of the language may have thought of other ways.

One would expect that the hypothesis that explains the predicted observation best will persevere until a better hypothesis appears (which ultimately depends on which criteria are chosen to determine which is the ‘best’ hypothesis). However, there is a way to increase the probability that a hypothesis is indeed a plausible explanation for the phenomenon under study. If a certain number of quantitative procedures is executed and all the individual observations may be explained by one and the same hypothesis, this obviously bespeaks its credibility.

The next question is, then, how many different tests and corresponding predictions are needed for the hypothesis to be acceptable. This depends on the nature of the predictions. For instance, in De Jonge 2000, another test was conducted in order to show the hypothesis stated above: it was predicted that there should be a correlation between animate subjects and the *indefinido* and inanimate subjects and the *imperfecto*, based on the idea that animates are more likely to be subjects of events in focus and inanimates are more likely to be the subjects of supportive events (De Jonge 2000: 245). Although the prediction is confirmed by the data and both this prediction and the one on the correlation between the verb tenses and main and subordinate clauses may be explained by the same hypothesis, the question remains whether both predictions are independent demonstrations of the same hypothesis. It can be argued that animate subjects are more prominent

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7. Classifying verbs into type groups is most common in linguistic analysis, cf. for example the famous Vendler classification into verbs that express, respectively ‘activity’, ‘accomplishment’, ‘achievement’ and ‘state’ (Vendler 1957). Since there is no formal criterion to distinguish among these classes, it comes as no surprise that there is disagreement in the actual classification of individual verbs in different languages. Even a distinction between transitive and intransitive verbs cannot be done independently, and so it is perfectly logical, for example, to distinguish between verbs that have one complement and the ones that have two (or three), but see also García (1975: 84–91).



and dynamic than inanimates, and may therefore occur more frequently in main clauses and with verbs of motion than inanimates, so all the tests fundamentally are inter-dependent i.e. depend on one another and therefore cannot be considered as being independent and autonomous. Although this particular case does not seem to be too problematic, the idea that the interrelation of contextual factors is indeed an important element to be taken into account is shown by Mauder (2008), who convincingly demonstrates that most quantitative validation of the research done on Spanish oblique pronouns, and ultimately in linguistics in general, leaves much to be desired.

#### 4. Conclusion: This volume

From all of the above, it may be clear that the purpose of this volume is to open a debate on the necessity of independent validation of hypotheses in linguistics, and how this validation should be conducted, i.e. what forms it may have, and which observations count as objective and which do not. Each and every paper in this volume contains a section which aims at measuring certain linguistic phenomena in order to provide evidence for the presented hypotheses. Practically all papers reflect the theoretical approach of Columbia School Linguistics or have an approach most similar to it. The volume consists of two parts: a first part in which grammatical problems are treated, and a second part on Phonology as Human Behavior (PHB), the Columbia School version of phonology, which aims at 'discovering both the optimal characterization of the abstract sound unit, the phoneme, and an explanation for the nonrandom skewing of the sound units within language' (Tobin 1997:31).

The first part opens with Dreer, who presents a textual analysis of the use of the French subjunctive and indicative. His paper shows how a postulated invariant meaning that motivates the distribution of each mood in French can be validated statistically. The tested invariant meaning for the subjunctive forms is *ALTERNATIVE TO OCCURRENCE CONSIDERED*, the used quantitative testing techniques are the bottom-to-top sign-to-text and the top-to-bottom text-to-sign approaches (cf. Tobin 1990, 1993, 1995), procedures that reveal the non-arbitrary relations of the meaning of the form and its distribution with certain elements in a given text (sign-to-text) and, *vice versa*, the message of a text as a determiner for the distribution in it of a given form (text-to-sign). The former approach predicts co-occurrence of subjunctive mood with certain characters; the latter relative predicts a preference for subjunctive mood in certain text fragments.

Even-Simkin & Tobin is the least quantitative paper of this volume. However, the observations made are strictly objective: it deals with the systematic Internal Vowel Alternation (IVA) in English nouns and verbs, which is generally

considered to be ‘irregular’. Even-Simkin & Tobin show that the IVA process is not only regular, in the sense that the nouns that show this phenomenon systematically undergo vowel fronting in plural formation (e.g. *goose-geese*, *mouse-mice*), whereas the verbs undergo backing of their respective vowels in non-past to past formation (e.g. *sing-sang*, *take-took*). Furthermore, both IVA processes appear to be connected to invariant meanings in general and for each one of the sub-groups within this larger IVA sign system which can be opposed to their so-called ‘regular’ counterparts.

De Jonge presents two Spanish small-clause constructions: *al* + infinitive and *gerundio*, as in *al llegar* ‘at the arrival’ vs. *llegando* ‘arriving’. First he presents a hypothesis for the meaning of the constructions, strictly based on the meaning of the forms that constitute the respective constructions. After having demonstrated these meanings, De Jonge also tries to demonstrate that in some contexts, these differences in meaning are not crucial to the conveyed message. This observation might eventually shed light on how linguistic change could be initiated.

Kirsner presents an analysis of the Afrikaans demonstratives *hierdie*, *daardie* and *dié*, showing that these demonstratives – in contrast to the demonstratives in its sister language Dutch – must be analysed as signaling the meaning DEIXIS: an instruction to the hearer to seek out and attend to some referent. The way Kirsner demonstrates his hypotheses is by means of quantitative contrastive analysis with English translations of Afrikaans as well as their co-occurrence with other elements in the context, such as repetitions, descriptions etc. of the NP the demonstrative refers to. Needless to say, there is also abundant qualitative analysis, of all kinds of text types, such as novels, essays and poetry.

Riggs, in the last paper of this section, focuses on the Japanese benefactive auxiliaries *kureru* ‘somebody does me a favor’ and *morau* ‘I have somebody do me a favor’. In spite of the fact that the uses of *kureru* and *morau* are often considered interchangeable, this contribution shows, by means of both qualitative and quantitative empirical data, that the word-selection of *kureru* over *morau* and vice versa is based on speaker’s intentions, using the most effective form in the particular context. In this study, the degrees of the speaker’s emphasis on the agent is characterized as AGENT FOCUS, and AGENT DEFOCUS, respectively. The hypothesis is being demonstrated using abundant quantitative and qualitative data, the former emphasizing different agent types, which are inherently more or less focused, and other contextual elements, such as the presence of elements expressing gratitude which supposedly favor the AGENT FOCUS auxiliary *kureru*.

The second part of the volume, which is on Phonology as Human Behavior (PHB), the phonological component of the CS theory, opens with Tobin, who gives an overview of PHB from an evolutionary point of view. This paper constitutes a hallmark for the rest of the papers presented in this section. Three out of four papers -Enbe & Tobin, Halpern & Tobin and Połczyńska & Tobin – discuss

phonological phenomena related to speech or hearing pathology, explaining them within PHB theory and presenting quantitative data to support their findings.

Enbe & Tobin focus on the prosody of normal-typical and pathological-atypical speech in Buenos Aires Spanish. Instead of using a corpus of observed speech, they have used a repetition task in order to have controllable and comparable data on informants of different ages with different speech disorders. Halpern & Tobin study phonological error processes in the speech of hearing impaired adults in Israel, using different speech tasks with four different grades of difficulty, ranging from spontaneous conversation to an articulation test. Interestingly enough, it is shown in various ways that there is a clear and direct relation between the degree of effort investment by the informants and the enhancement of communication. Of course, this is perfectly compatible with the tenets of PHB theory.

This direct connection between the exertion of effort and improved communication is also crucial for for Połczyńska & Tobin, who investigate speech problems in Polish informants with brain injuries. It appears that these informants produce processes that are unknown in L1 acquisition, but the processes they apply in order to enhance communication are nevertheless comparable to simplifying processes observed in L1 acquisition.

The remaining paper in this section, Roe-Portiansky & Tobin, presents phonological data as a fundamental part of a literary analysis. They convincingly demonstrate that there is a relation between the meaning of lexicon -natural or supernatural- in a sample of Russian literature and the phonological structure of the observed lexicon in these semantic fields. Of course, this is very interesting in the light of the main theme of this volume, for the study of independent data to demonstrate a hypothesis is not only necessary for linguistics, but in fact for all science, and therefore also – supposedly – for literary studies. This paper presents an interesting attempt of doing so.

Of course, many issues are left for further discussion. For instance, what kind of data can or should be the object of study? Carefully elaborated language, such as literature, has its advantages, but may also depart from natural language since artists permit themselves things that are not expected in everyday life. Natural, spoken language supposedly is the purest or most frequent and authentic source of data, but the problem is that there are many more factors that play a role, both extralinguistically (body language, setting, etc.) as well as paralinguistically (intonation, pitch, etc.) which may blur the results and/or make their observation more problematic. Written language obviously has advantages over spoken data as far as controllability is concerned. The use of questionnaires, if representative, is an additional means to be used for validating hypotheses. Another point that is not discussed here, is the use of statistics in order to test the validity of the observations. Mauder (2008) gives an excellent overview of this discussion, related to the types of data that can be used for linguistic science.

We, the authors, will let the reader decide whether the data presented in this volume indeed adhere to all the criteria presented above, but it may be clear that, as far as we are concerned, linguistics surely is and should be an empirical science to be taken seriously.

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PART I

**Independent evidence in grammar**



# The distribution of linguistic forms and textual structure

## Two sign-oriented approaches to the textual analysis of the use of the French Indicative and Subjunctive\*

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This paper builds on my previous work (cf. Dreer 2007) and presents two sign-oriented approaches to the textual analysis that emphasize the connection between the distribution of linguistic forms and the textual structure. The paper deals with the semantic opposition of the French Indicative and Subjunctive, viewed as Saussurean signs (cf. Saussure 2001 [1916]). I show that the distribution of the Indicative and the Subjunctive is not random throughout texts of different literary sources. It is motivated by the invariant meanings of both signs. I validate this analysis quantitatively, by calculating a statistical skewing.

### 1. Introduction

The opposition of the French Indicative and Subjunctive has been the object of a considerable number of studies representing diverse theoretical approaches. Most of these analyses provide lists of the functions of both moods and the linguistic environments that supposedly govern their use: e.g. Börjeson (1966), Boysen (1971), Cohen (1965), Grevisse and Goosse (2001), Nordahl (1969). The data show, however, that: (a) the functions attributed to each mood are imprecise, inaccurate, open-ended or overlap and (b) the specific linguistic environments do not always govern an expected mood. The purpose of this paper is not only to show a common denominator – an invariant meaning that motivates the distribution of each mood in French – but also to validate the postulation

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of these meanings statistically. The fact that the choice between the Indicative and the Subjunctive is not random is even better perceived on the textual level. Therefore, this paper presents two sign-oriented approaches to textual analysis that emphasize the connection between the distribution of both moods and textual structure.

## 2. Recent studies<sup>1</sup>

Studies claiming that the Subjunctive is meaningless are not uncommon. According to Poplack (1992), variability is the main inherent feature of the Subjunctive. She claims that the Subjunctive, the Indicative and the Conditional are the variants of the same linguistic variable that may alternate in embedded clauses without any difference in meaning. Touratier (1996) deals with the functional value of the Subjunctive that depends on whether or not this mood can alternate with the Indicative. Touratier distinguishes between the required (meaningless) Subjunctive and the meaningful Subjunctive, optionally used by the speaker. Martin (1983) and Nølke (1993, 2001) show a trend toward a single meaning for all the uses of the Subjunctive. According to Martin, the Subjunctive appears when a truth-value cannot be assigned to a sentence, i.e. when a proposition is attributed either to a possible world or to a counterfactual world. Nølke deals with the Subjunctive from the point of view of the theory of polyphony that considers a sentence through the prism of all the possible subjects (Nølke's *énonciateurs*), explicitly and implicitly present there (cf. Nølke 1993: 195). He claims that the Subjunctive appears in sentences that imply two different subjects (Nølke's *énonciateurs* E1 and E2), one of which is identified with a point of view, presented by the main clause (Nølke's *locuteur-en-tant-que-tel* I0) providing new information, and the other is presented by the subordinate clause (Nølke's *locuteur-en-tant-qu'individu* L), associated with known information. That is what Nølke (ibid: 196) calls *internal polyphony*. However, the hearer's (Nølke's *allocutaire*) awareness of the information, presented in the subordinate clause, requires the use of the Indicative even in the case of internal polyphony. Therefore, the author (cf. ibid: 200) postulates that the Subjunctive is the marker of internal polyphony in the strict sense (Nølke's *polyphonie interne au sens strict*), which means that *only* a

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1. For a detailed survey of the studies of French mood, cf. Hunnius (1976), Moignet (1959), Schifko (1967).

*locuteur-en-tant-qu'individu L* (known information) is associated with an *énonciateur* of the subordinate clause.

### 3. Hypothesis

The studies cited above deal with concepts external to language per se and more directly related to the concept of thought such as sentences and their constituents as well as logical and pragmatic discourse contexts. However, one of the principles of Saussure's *Cours de linguistique générale* (2001 [1916]) is that a variable sentence is not an ideal unit of analysis as opposed to a specific sign with its invariant meaning.

Psychologically, setting aside its expression in words, our thought is simply a vague, shapeless mass. Philosophers and linguists have always agreed that were it not for signs, we should be incapable of differentiating any two ideas in a clear and constant way. In itself, thought is like a swirling cloud, where no shape is intrinsically determinate. (Saussure 1983 [1916]: 110)

Therefore, the sign-oriented Columbia School approach, which I follow in this paper, considers language as a tool of human communication, composed of an inventory of signs rather than of words and sentences. Following Saussure, the linguistic sign represents a single unit, composed of a signal (Saussure's *signifiant* 'signifier') invariably paired with its relatively abstract meaning (Saussure's *signifié* 'signified'). For the opposition of the Indicative and the Subjunctive, viewed as Saussurean signs, this means that the distribution of both moods is not arbitrary, but motivated by the single invariant meaning postulated for each of them.

What the Indicative and the Subjunctive have in common is that they both designate events, actions or states of being (hereafter *occurrences*), "something that is localized in time, that may or may not happen, that involves entities which contribute to a greater or lesser extent to its realization" (Reid 1983 [1979]: 44). In his analysis of Ancient Greek, Diver (1969: 47–48) uses the substance *occurrence* to refer to a grammatical system that deals with the traditional moods. Reid (1974: 50–51) refers to this system as the *Occurrence system* the semantic substance of which deals with "whether or not a question has been raised concerning the actual occurrence of the action named by the verb; and if a question has been raised, how likely the occurrence, nevertheless, is" (ibid: 50). According to Reid (ibid), the traditional Subjunctive mood, as in French, Latin, English or Swahili, is considered part of this Occurrence system. Therefore, I postulate that the French Occurrence System consists of the opposition of the Subjunctive, the Indicative,

the Conditional and the Imperative.<sup>2</sup> The opposition of the Indicative and the Subjunctive can be illustrated by the following sentences:<sup>3</sup>

- (1) *Je ne pense pas qu'il EST (I) malade.* – (*Indicative*: He is rather in good health.)  
'I don't think he IS (I) [EST] sick.'
- (2) *Je ne pense pas qu'il SOIT (S) malade.* – (*Subjunctive*: He may be in good health, but his sickness is not ruled out.)  
'I don't think he MAY BE (S) [SOIT] sick.'

As shown by Examples (1)–(2), the opposition of both moods allows the French speaker or writer, i.e. the author of an audible or written sentence (hereafter *encoder*):

- i. To emphasize with the Indicative his/her commitment to the reality of an occurrence.
- ii. To emphasize with the Subjunctive another, *alternative* occurrence in order to avoid a commitment to the reality of an actual occurrence.

Therefore, I postulate that the French Indicative means OCCURRENCE, whereas the French Subjunctive means ALTERNATIVE TO OCCURRENCE CONSIDERED or ALTERNATIVE, for short.<sup>4</sup> OCCURRENCE means a situation, experienced in the present or the past, or expected to take place in the future. ALTERNATIVE means the contextual “implication of an expectation to the contrary of whatever is expressed” (Nathan & Epro 1984: 520), i.e. a departure from the encoder's expectations.

The meaning OCCURRENCE of the Indicative is appropriate for committing to an occurrence, as in Example (1). This meaning implies the real or certain outcome from the encoder's point of view. The meaning ALTERNATIVE TO OCCURRENCE CONSIDERED of the Subjunctive is more appropriate for avoiding making a commitment to an occurrence, as in Example (2). It reorients the hearer's or read-

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2. The meanings and the place of the Conditional and the Imperative within the Occurrence System are the subjects of further research and, thus, are less relevant to the analysis here.

3. In all the examples, the Subjunctive is designated as (S), and the Indicative as (I). All the capitalized or italicized forms are mine as well as the translations from French into English, unless otherwise indicated. For clarity sake, I also quote the French original in square brackets in the translations because English and French very often express the same idea in different ways.

4. The meaning ALTERNATIVE was postulated by de Jonge (1999, 2001, 2004) in his Columbia School study of the Spanish Subjunctive, which means “contextual relevance of an *alternative* for the occurrence expressed by the verb” (de Jonge 1999: 82) to be precise. I show that the meaning ALTERNATIVE accounts for the use and the distribution of the French Subjunctive.

er's (hereafter *decoder's*) attention from the actual outcome to a possible alternative. As a result, this meaning implies doubt or another potential outcome, which differs from the encoder's expectations.

The meaning ALTERNATIVE TO OCCURRENCE CONSIDERED of the Subjunctive is more complex than the meaning OCCURRENCE of the Indicative. The Subjunctive refers to an occurrence and simultaneously implies an alternative, i.e. two opposite occurrences at the same time. Therefore, the Indicative is associated with the usual or predictable state of affairs and "serves as default option" (García 1994:334), and the Subjunctive is identified with the unusual and the unpredictable. It suggests "that the communication concerns a state of affairs different from what would (normally) have been anticipated" (ibid). Finally, the Subjunctive is generally used less frequently than the Indicative. If one applies the Jakobsonian concept of a markedness relationship (cf. Jakobson 1984:41–58; 1990:134–140) to the binary opposition between the Indicative and the Subjunctive, the former will constitute the *unmarked* member, while the latter will be the *marked* member of the pair. This means that the Subjunctive makes a specific claim concerning the presence of the meaning ALTERNATIVE, while the Indicative makes no specific claim about the presence of this meaning.

#### 4. Communicative strategies of the use of the Indicative and the Subjunctive

Native speakers of French employ the meaningful contrast between the Indicative and the Subjunctive for different communicative purposes, referred to as *communicative strategies* in Columbia School theory (cf. Diver 1995; García 1975; Reid 1995): i.e. a regular, standardized or idiomatic combination of a specific meaning with other meanings to contribute to particular messages. When such a combination of meanings is unidiomatic, French native speakers say *on le dirait autrement en français* 'we would say it another way in French'. The postulation of communicative strategies can be viewed as a tendency towards conformity and the systematization of the use of linguistic signs. It results from the "pressure" that a social group exerts "on its own members in the direction of a standardized usage" (Diver 1995:78) that contributes to better communication. The basic strategies related to our study are postulated as follows:

- i. The French Occurrence System opposition is used to differentiate the degree of the encoder's commitment to an occurrence. I will show that the encoder uses the Indicative to commit to an occurrence, whereas the Subjunctive is used to deemphasize the encoder's commitment to it.

- ii. The French Occurrence System opposition is used to (de)emphasize a departure from the norm without the idea of commitment. I will maintain that the encoder uses the Indicative to emphasize the normal state of affairs or to rule out any deviation from the norm, whereas the Subjunctive is used to emphasize a departure from the norm that deserves the decoder's attention.

#### 4.1 The French occurrence system and the encoder's commitment

The use of the meaningful opposition of the Indicative and the Subjunctive arises from the need to emphasize or deemphasize particular information. What the decoder often infers from the use of this opposition is the degree of the encoder's commitment to an occurrence. By commitment, I mean the encoder's readiness to take responsibility for the outcome of an occurrence rather than to indicate whether the proposition or the "content" of a sentence is true or false in terms of its provability, which is most often the case in traditional logic and semantics. Strictly speaking, neither the Indicative nor the Subjunctive meets the truth or provability criterion. As de Jonge (2001) observes:

Speakers express, by definition, a vision on reality that is subjective and can only be taken as the version of reality he or she wants to get across to the hearer. The best proof of this is lying: all speakers are capable of lying, and I believe I am not saying anything absurd if I state that most lying will take place in indicative mood. Thus, occurrences expressed in indicative mood are not necessarily factual, but the effect on the hearer is intended to make him or her believe they are.

(de Jonge 2001:81)

The use of the Indicative causes the decoder to infer the certainty of an occurrence because it is based on facts, evidence, the encoder's knowledge or strong belief. On the other hand, from the use of the Subjunctive, the decoder infers that the encoder is not confident of the certainty of an occurrence. It reorients the decoder's attention to an alternative outcome that the encoder does not rule out either. This claim is illustrated by Examples (3)–(6).

The set of Examples (3)–(4) illustrates the use of the Subjunctive and the Indicative in the subordinate clause, introduced by the verb *souhaiter* 'to wish'.

- (3) Il fait très beau à Paris de ce moment. *Je souhaite que* vous en AYEZ (S) autant, *je souhaite* surtout *qu'il* FASSE (S) ce temps-là dans deux mois, je veux dire dans un mois et demi juste. (Colette 1970 [1960]: 32)

'The weather is very good in Paris at this time. *I wish that* you HAVE (S) [AYEZ] it as well. *I wish* especially *that* the same weather BE (S) [FASSE] in two months, I mean in one month and a half exactly.'

In this example, taken from *Mitsou* by Colette (1970 [1960]), the Subjunctive implies a desired occurrence that is not taking place. Therefore, it is impossible to be confident of its realization.

The Indicative can also appear with the verb *souhaiter* 'to wish' when the encoder's intention is to emphasize the probability of a desired occurrence or a strong hope, as in Example (4), taken from the French newspaper *Libération* (30–31.10.99).

- (4) En s'adressant une dernière fois au tribunal, le guide a déclaré: « A toutes les familles touchées..., je *souhaite que* le temps leur PERMETTRA (I) d'entendre ce que je vais leur dire: je leur demande pardon. »

(Libération, 30–31.10.99, p. 18)

'Speaking to the court for the last time, the guide declared "I *wish* to all the affected families... *that* time WILL (I) ENABLE [PERMETTRA] them to hear what I'm going to say to them: I beg your pardon."

In this example, the guide who has been accused of the unpremeditated manslaughter of a group of pupils expresses his strong hope that he will be forgiven.

Another way to emphasize the alternative and, thus, to avoid the encoder's commitment to an occurrence is to comment on the latter with emotional and appreciative expressions. The invariant meaning ALTERNATIVE TO OCCURRENCE CONSIDERED of the Subjunctive is appropriate for this kind of subjective interpretation of an occurrence. The encoder's comments result from the comparison between the actual outcome of an occurrence and what might be its alternative. Leeman-Bouix (1994) states on the matter as follows:

Mais pour porter ce jugement [*Je me réjouis que tu me comprennes*], et choisir entre la satisfaction et le mécontentement ou la déception, encore faut-il comparer, mentalement, l'effet que me fait la constatation que tu ne me comprends pas. Autrement dit, pour pouvoir affirmer *Je me réjouis*, il faut prendre en compte les deux possibilités: ce qui me permet de définir mon sentiment si tu me comprends, c'est de peser celui que m'aurait causé ton incompréhension. Le subjonctif correspond donc bien ici, malgré les apparences, à la définition que l'on s'est donnée: le fait que tu me comprennes est mentalement mis en parallèle avec le fait que tu ne me comprennes pas, et c'est la comparaison de l'effet produit sur moi des deux comportements qui me permet de dire *Je me réjouis que tu me comprennes* (ou aussi bien *Je suis désolé que tu ne me comprennes pas*).

(Leeman-Bouix 1994:91)

'But in order to make the judgment *I'm delighted that you understand me* and to choose between satisfaction and dissatisfaction or disappointment, it is necessary

to compare what your misunderstanding means to me. In other words, in order to affirm *I am delighted*, it is necessary to take into account both possibilities. What allows me to define my feeling when you understand me is the comparison with the feeling that would mean your misunderstanding to me. In spite of appearances, the Subjunctive fits in with our definition here. The fact that you understand me is compared with the fact that you do not understand me. The comparison of the effect that both attitudes produce on me allows me to say *I am delighted that you understand me* (or as well *I am sorry that you do not understand me*).<sup>7</sup>

In other words, the consideration of the alternative deemphasizes the encoder's taking responsibility for the outcome of an occurrence. Example (5), taken from *Le Petit Prince* by Saint-Exupéry (1946), is an instance of an explicit comment on an occurrence with the emotive expression *être content* 'to be glad, happy'.

- (5) *Je suis content*, dit-il, *que tu sois* (S) d'accord avec mon renard.  
(Saint-Exupéry 1946: 78)  
“*I am glad*,” he said, “*that you AGREE* (S) [SOIS] with my fox.”  
(Saint-Exupéry 1943: 76)

In this passage, the Little Prince takes into account that the idea of the fox might be beyond the comprehension of the adult narrator. Therefore, this alternative is emphasized with the Subjunctive in this example.

The use of the Indicative in this linguistic context is unusual. However, instances of the “forced marriage” (Reid 1995: 126) of these seemingly incompatible meanings can be found, as in Example (6), taken from *L'île* ‘The Island’ by Merle (1962).

- (6) Et y aura p'têtre un matelot qui *sera pas bien content qu'*le vent A (I) pas SOUFFLÉ dans ses voiles. Dans c'cas, j'dis: fils, la loi, c'est la loi.  
(Merle 1962: 206)  
‘And, perhaps, there will be a sailor who *won't be very happy that* the wind HASN'T (I) BLOWN [A SOUFFLÉ] in his sails. In that case, I'll say: son, the law is the law.’

Here, too, the appearance of the Indicative is motivated by its invariant meaning. This mood produces a particular communicative effect, focusing the decoder's attention on the inevitable result of an occurrence. In this example, the assembly discusses the distribution of the Tahitian women among the sailors. The sailors' leader Mac Leod knows that one sailor will not agree with the distribution because they both desire the same woman. Since Mac Leod has a majority in the assembly, the result of the vote is clear to him and, therefore, appears in the Indicative.

The encoder's avoidance to commit to an occurrence may also be signaled by the choice of verbs and expressions of anticipation in time (*attendre que* ‘to wait for’, *avant que* ‘before’, *jusqu'à ce que* ‘until’, *en attendant que* ‘until’), purpose and

consequence (*afin que, pour que* ‘in order that’, *de (telle) façon/manière/sorte que* ‘so ... that’), condition or supposition (*à (la) condition que* ‘on condition that’, *à moins que* ‘unless’, *à supposer que, en admettant que* ‘supposing that’, *pour peu que* ‘if’, *pourvu que* ‘provided that’) and fear (*avoir peur, craindre* ‘to fear, to be afraid’, *de crainte/peur que* ‘for fear that’, *redouter* ‘to dread’) for which the use of the Subjunctive is appropriate as in Examples (3)–(6) above.

#### 4.2 The occurrence system and a departure from the norm

It is quite common that the encoder’s commitment or avoidance of a commitment to an occurrence does not explain his/her choice between the Indicative and the Subjunctive. However, as in all the previous examples, I argue that this choice is motivated by the invariant meaning of each mood. This claim is illustrated by Examples (7)–(8) of the use of the Indicative and the Subjunctive with the expression *tout ... que* ‘although, no matter how’.

- (7) Vous avez bien dit: *Voter!*... Et comme si cela ne suffisait pas, vous voulez qu’à côté de ces hommes qui, *tout* bandits *qu’ils* SOIENT (S), sont quand même des Britanniques, vous voulez que des Noirs, je dis bien: des Noirs, soient admis à siéger. (Merle 1962: 196)

‘You have really said “To vote!” and as if it was not enough, you want that beside these men who are nevertheless British citizens, *even though* they MIGHT (S) BE [SOIENT] bandits, you want the blacks, I do say “the blacks”, to be allowed to sit in session.’

- (8) Si Mason préfère rester en cale sèche au lieu d’tirer un bord jusqu’ici, c’est son affaire. Mais la loi, c’est la loi, même pour Mason, *tout* officier *qu’il* EST (I)! (Merle 1962: 206)

‘If Mason prefers staying in the dry dock instead of drawing his board here, that is his business. But the law is the law, even for Mason, *although* he is (I) [EST] an officer!’

Both examples have been taken from the same novel (!) *L’île* ‘The Island’ by Merle (1962). Both in (7) and in (8), the encoder commits to the outcome of the occurrence. While in (7) the Subjunctive emphasizes an alternative and, as a result, a deviation (a difference), in (8) the Indicative implies the irrelevance of any alternative and, thus, of any deviation. In Example (7), the first officer refuses to participate in the assembly because the “blacks” (the Tahitians) sit there as equals with the British sailors. For him, the British sailors might otherwise have not been bandits, by which they differ from the “savage” Tahitians, being superior to them. This alternative (and, as a result, the difference) is implied by the use of the Subjunctive in Example (7). However, this alternative is absent in Example (8) where the sailors start with the *fact* that Mason is an officer, without any doubt



or any other possibility. The sailors discuss how to distribute the Tahitian women among themselves. For them, the *fact* that Mason is the first officer does not mean his enjoying any privilege or disobeying adopted decisions. The irrelevance of any alternative and, as a result, of any difference for Mason is what the Indicative implies in this example.

The message of a departure from the norm, to which the invariant meaning of the Subjunctive contributes, accounts for the recent use of this mood, following the conjunction *après que* ‘after’. The Indicative, which is used very frequently with this conjunction, emphasizes the normal state of affairs, the sequence of factual occurrences, as in Example (9), taken from *J’irai cracher sur vos tombes* ‘I Spit on Your Graves’ by Vian (1973).

- (9) [...] je me suis agenouillé devant Lou. J’ai défait la corde qui lui tenait les mains; elle avait des traces profondes sur les poignets et elle était flasque à toucher comme sont les morts juste *après qu’ils SONT* (I) MORTS...  
(Vian 1973: 125)

‘[...] I knelt beside Lou. I undid the rope that held her hands; she had deep traces on the wrists and she was flabby like the dead just *after* their DEATH (I) [SONT MORTS]...’

In this example, the fact of being flabby comes logically and chronologically after death. This is not the case in Counterexample (10), taken from the same novel (!).

- (10) – Vous vous sentez mieux?  
– Je me sens très bien. Et Jean, est-ce qu’elle se sentait bien après?  
– Après quoi?  
– *Après que* vous l’AYEZ (S) BAISÉE? (Vian 1973: 120)  
‘– Do you feel better?  
– I feel very well. And Jean, did she feel well afterwards?  
– After what?  
– *After* you FUCKED (S) [AYEZ BAISÉE] her?’

Though *après que* introduces a factual event, the Subjunctive emphasizes the possibility of its alternative interpretation. From the Subjunctive in this example, the decoder infers that a girl feels jealous of (is against) the character’s sexual relations with her sister Jean. In other words, for the girl, these relations were a big mistake and the character should have not had them with Jean. This alternative is emphasized by the use of the Subjunctive in Example (10).

I claim that the use of the superlative is another way to imply an alternative. The superlative shows that an antecedent is the best or the only possible choice. The more the encoder emphasizes an alternative and, as a result, a difference (a deviation) between an antecedent and other *possible* entities, the more the Subjunctive appears in this linguistic context. Examples (11)–(12), taken from *Caligula*

by Camus (1958), present two ways of viewing entities following the restrictive adjectives *l'unique*, *le seul* 'the only'.

- (11) Caligula: [...] Je continue. C'est *l'unique composition* que j'*AIE* (S) *FAITE*.  
Mais aussi, elle donne la preuve que je suis *le seul artiste* que Rome *AIT* (S)  
*CONNU*, *le seul*, tu entends, Cherea, *qui METTE* (S) en accord sa pensée  
et ses actes. (Camus 1958: 141)

'Caligula: [...] I continue. It's *the only poem* I *HAVE* (S) *MADE* [*AIE FAITE*].  
And it's proof that I'm *the only true artist* Rome *HAS* (S) *KNOWN* [*AIT*  
*CONNU*] – *the only one*, believe me – to *MATCH* (S) [*METTE*] his inspiration  
with his deeds.' (Camus 1947: 84)

- (12) Scipion: Je puis nier une chose sans me croire obligé de la salir ou de retirer  
aux autres le droit d'y croire.

Caligula: Mais c'est de la modestie, cela, de la vraie modestie! Oh! cher  
Scipion, que je suis content pour toi. Et envieux, tu sais... Car c'est *le seul*  
*sentiment* que je n'*ÉPROUVERAI* (I) peut-être jamais. (Camus 1958: 98)

'Scipio: One may deny something without feeling called on to besmirch it,  
or deprive others of the right of believing in it.

Caligula: But that's humility, the real thing, unless I'm much mistaken. Ah,  
my dear Scipio, how glad I am on your behalf – and a trifle envious, too.  
Humility's *the one emotion* I *MAY* (I) never *FEEL* [*ÉPROUVERAI*].'

(Camus 1947: 56–57)

In Example (11), Caligula considers himself the best and most exceptional poet that Rome has ever known. Caligula implies that he might have written more poems just like so-called artists of Rome and that Rome might have known more true artists just like him, if they had composed in harmony with their deeds like him. It is this alternative (and, a result, a difference from other "artists") that Caligula emphasizes by using the Subjunctive in Example (11). This is not the case in Counterexample (12) where Caligula focuses only on the humility that he loathes, without any other possibility. Therefore, this absence of an alternative and, as a result, of any difference is presented by the Indicative in this example.

A departure from the norm is also expressed by the Subjunctive following verbs and conjunctions that designate negation (*démentir* 'to deny, to refute', *nier* 'to deny', *bien que*, *quoique* 'although, though', *non que*, *ce n'est pas que* 'not that', *sans que* 'without doing', etc.) because it implies by definition "what might have happened but didn't" (Reid 1983 [1979]: 193).<sup>5</sup>

5. In Dreer (2007: 152–153), I confirm statistically the tendency to use the Subjunctive in the subordinate clause following the negated main clause.

## 5. Two approaches to textual analysis

### 5.1 Non-random textual structure

Although analyses of individual examples are of great significance in linguistic studies, they alone do not allow us to be sure that “the hypotheses put forth are neither accidents of a few striking examples nor facile readings of stereotypical sentences out of context” (Davis 2002: 65). Under these circumstances, quantitative textual analyses represent an important methodological contribution. Indeed, if the distribution of linguistic forms is not random at the level of individual examples, one can expect that this non-random distribution will also be confirmed throughout texts. Assuming that people produce coherent messages, any text can be viewed as an inventory of different ideas (contexts, themes or leitmotifs) consistently built around the major textual message. Davis (ibid) states the following on this matter:

A novel is no more a random sample of linguistic forms than a symphony is a random sample of musical notes. (Davis 2002: 71–72)

I maintain that the non-random distribution of both moods, which we have seen in Examples (1)–(12) above, will also appear within texts by different authors. For this purpose, I apply two sign-oriented perspectives or semiotic approaches to a textual analysis: the (ascending) “from sign to text” approach and the (descending) “from text to sign” approach. These approaches have been suggested by Tobin (1990, 1993, 1995) for the analysis of the connection between the distribution of linguistic forms and textual structure. The “from sign to text” approach in this study deals with the consistent use of the Indicative and the Subjunctive in particular contexts within a text. The “from text to sign” approach here deals with the distribution of both moods motivated by the message of a text itself that is viewed as a sign in its own right.

### 5.2 “From sign to text” approach

Columbia School theory distinguishes between *invariant meanings* as part of the abstract language system and variable *messages* as part of discourse or communication, i.e. as part of the concrete use of the language system. The encoder uses the relatively abstract invariant meaning of a sign(al) to convey concrete contextual messages. In other words, “linguistic forms occur where they do because they are the signals of meanings, being used by people to communicate messages” (Contini-Morava 1995: 1–2). Starting with this assumption, the use of one particular sign with its invariant meaning for particular communicative purposes may be more appropriate than the use of other signs, found in the same system.

This reasoning can be applied to the analysis of the distribution of a sign within and throughout a text. A text is divided into themes or leitmotifs that may be associated with messages to which the invariant meaning of that specific sign contributes. The consistent and repeated exploitation of the same sign within specific contexts related to particular leitmotifs creates a sense of coherence and cohesion in a text. Consider Tobin (1995) on this matter:

The ability to trace the consistent uses of a sign within a system to appear in specific contexts within a particular text is what we call the “from sign to text” approach. It allows us to view the text in the hierarchical ascending order of sign and system to context and text. (Tobin 1995:62)

The example of the “from sign to text” approach is the analysis of the English connectives *also* and *too* in the texts *Alice in Wonderland* by Carroll (1961) and *Looking for Mr. Goodbar* by Rossner (1976), discussed in Tobin (1990:151–187). While dealing with these connectives, Tobin (ibid: 154–156) postulates that both share the semantic domain of addition. He assumes that these connectives are not synonyms.

[...] each possesses a single invariant meaning which distinguishes it from the other, and will motivate its distribution in the language. (Tobin 1990:155)

The difference between the connectives *also/too* revolves around the feature ‘Semantic Integrality’. This feature shows “whether an entity or entities is/are perceived as occupying a single continuous space or not” (Tobin 1990:155). Within the pair *also/too*, *also* is unmarked (U) and *too* is marked (M) for ‘Semantic Integrality’. This means that in each case, *too* (M) presents an addition between two entities “as being *integral*”, i.e. as “occupying the same continuous internal space” (ibid). The unmarked form *also* does not necessarily present an addition as being *integral*. Tobin (ibid: 157–186) shows how the postulated invariant meanings motivate the choice of forms throughout the texts *Alice in Wonderland* (Carroll 1961) and *Looking for Mr. Goodbar* (Rossner 1976). When the encoder focuses on the unity, on “the integrality of an addition” that she views as being necessary, positive, or beneficial to herself (Tobin 1990:157), the marked form *too* consistently appears. When the encoder emphasizes the disunity of an addition or a connection that she views as being unnecessary, optional, negative or against her interest, the unmarked form *also* consistently appears.

As applied to my analysis, the “from sign to text” approach means the following:

- i. The distribution of the Subjunctive versus the Indicative is not random, but is skewed along thematic lines within a text.

- ii. The choice and preference of one or the other mood can be related directly to particular themes, specific characters and recurring or related events in the plot or sub-plots within the text.
- iii. Therefore, the choice and preference of one mood over the other can serve as part of a larger system of textual coherence and cohesion.

The “from sign to text” approach is represented schematically in Figure 1.

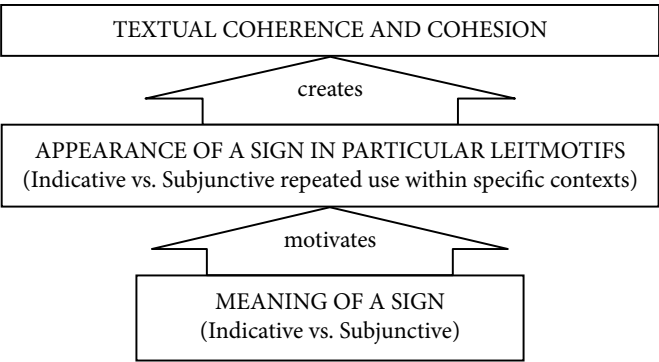


Figure 1. “From sign to text” approach

The text that I have chosen for the “from sign to text” analysis is *Antigone* by Anouilh (1963).

5.3 Antigone

This play by Jean Anouilh deals with the tragic destiny of those who oppose power and are against the dominant order. The plot unfolds in the ancient city of Thebes. After the death of Oedipus’s sons, Eteocles and Polynices, their uncle Creon becomes the king of the city. He orders Eteocles to be buried in honor and Polynices to be left to rot. Antigone defies this ban and performs the funeral rites over the body of her brother. She is captured and taken to Creon who tries to save her and to conceal her crime. Nevertheless, Antigone does not desist from her attempts to bury her brother and prefers to be executed.

I have divided the play into two opposite leitmotifs: the idea of *revolt* versus the idea of *order*. These leitmotifs are embodied by the characters of Antigone, Creon and the Chorus that emphasize the coherence of the distribution of the Indicative and the Subjunctive throughout the text. As previously stated, the opposition of both moods is used to (de)emphasize a departure from the norm. The Indicative, meaning OCCURRENCE, contributes to communicate messages associated with the normal state of affairs or with the irrelevance of any deviation from

the norm. Therefore, this mood may be preferred for the characters that emphasize order. The Subjunctive, meaning ALTERNATIVE, contributes to messages that emphasize a departure from the norm, i.e. a conflict. Consequently, it seems more appropriate for the characters that personify revolt. Based on the plot and on the invariant meanings of both moods, I predict the following systematic distribution of the Indicative and the Subjunctive for the three characters:

- i. The more the character personifies the revolt, i.e. is opposed to the power and to the existing order, the more he/she will use the Subjunctive.
- ii. The more the character represents the power and the order, the more he/she will use the Indicative.

Antigone is a young girl who revolts against King Creon, who represents the power and the order. Antigone's tragedy is not only in the fact that she rebels alone, but also in that she is forced to confront all the other characters of the play. On the one hand, Antigone is opposed to her sister Ismene, to the Nurse and to her fiancé Haemon who are unwilling to understand nor to help Antigone in her intention to bury her brother with dignity and not leave him to rot. On the other hand, she is opposed to Creon and to the Guards who represent the dominant power and are overtly hostile to Antigone. In other words, Antigone embodies a single alternative to all the other characters of the play. Therefore, the Subjunctive is largely favored in her speech, as observed in Examples (13)–(14).

- (13) Antigone. – Il faut que j'*AILLE* (S) enterrer mon frère que ces hommes ont découvert. (Anouilh 1963:667)

'*Antigone*. I *MUST* (S) GO [*AILLE*] and bury my brother. Those men uncovered him.' (Anouilh 1958:32)

- (14) Créon. – Et si je te fais torturer?  
Antigone. – Pourquoi? Pour que je *PLEURE* (S), que je *DEMANDE* (S) grâce, pour que je *JURE* (S) tout ce qu'on voudra, et que je *RECOMMENCE* (S) après, quand je n'aurai plus mal? (Anouilh 1963:669)<sup>6</sup>

'*Creon*. Have you tortured, perhaps?  
*Antigone*. Why would you do that? To see me *CRY* (S) [*PLEURE*]? To hear me *BEG* (S) [*DEMANDE*] for mercy? Or *SWEAR* (S) [*JURE*] whatever you wish, and then *BEGIN* (S) [*RECOMMENCE*] over again?' (Anouilh 1958:33)

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6. One could argue that in both examples the Subjunctive is required by certain syntactic constructions and cannot be replaced by the Indicative. However, in literary texts, nothing is random and the use of each linguistic form is the author's choice to produce a communicative effect.

Creon represents the power and the order, but he is unwilling to rule. Creon is always forced to resolve a moral dilemma. He does not want to sentence Antigone to death, but he cannot help executing her. The Indicative appears in Creon's speech when he embodies power and the dominant order, whereas the Subjunctive appears when he is confronted with moral dilemmas, as in Example (15).

- (15) Créon [...]. – [...] C'est ignoble, et je peux te le dire à toi, c'est bête, monstrueusement bête, mais il faut que tout Thèbes SENTE (S) cela pendant quelque temps. Tu penses bien que je l'aurais fait enterrer, ton frère, ne FÛT (S)-ce que pour l'hygiène! Mais pour que les brutes que je GOUVERNE (I) COMPRENNENT (S), il faut que cela PUE (S) le cadavre de Polynice dans toute la ville, pendant un mois. (Anouilh 1963:670)

'*Creon*. [...] It's vile; and I can tell you what I wouldn't tell anybody else: it's stupid, monstrously stupid. But the people of Thebes HAVE (S) GOT TO HAVE [SENTE] their noses rubbed into it a little longer. My God! If it was up to me, I should have had them bury your brother long ago as a mere MATTER (S) [FÛT] of public hygiene. I admit that what I am doing is childish. But if the featherheaded rabble I GOVERN (I) [GOUVERNE] ARE (S) TO UNDERSTAND [COMPRENNENT] what's what, that stench HAS (S) GOT TO FILL [PUE] the town for a month!' (Anouilh 1958:34–35)

Antigone's tragedy is told by the Chorus whom Anouilh represents as a single figure. The Chorus-narrator introduces the characters in the prologue, summarizes the action and informs us about the fates of the characters at the end. In other words, the Chorus presents facts and, thus, embodies destiny and predetermination, i.e. the ultimate power. Therefore, it often uses the Indicative in the play, as in Example (16).

- (16) Le Prologue. – [...] [Hémon] ne savait pas qu'il ne DEVAIT (I) jamais exister de mari d'Antigone sur cette terre, et que ce titre princier lui DONNAIT (I) seulement le droit de mourir. (Anouilh 1963:642)

'*Chorus*. [...] [Haemon] didn't know, when he asked her, that the earth WASN'T (I) MEANT [DEVAIT] to hold a husband of Antigone, and that this princely distinction WAS (I) TO EARN [DONNAIT] him no more than the right to die sooner than he might otherwise have done.' (Anouilh 1958:4)

I claim that the Indicative and the Subjunctive are not distributed randomly or unpredictably throughout the play. I predict that Antigone, who embodies the strongest revolt and confrontation, will favor the Subjunctive more than the other characters. Despite his power and assurance, Creon is dissatisfied with his

methods of rule and is often faced with moral dilemmas. Therefore, I predict that Creon will use the Indicative and the Subjunctive proportionally: i.e. (a) the rate (percentage) of the Subjunctive in his speech will be less than that of Antigone, and (b) the rate of the Indicative will be less than that of the Chorus. The Chorus knows of the oncoming catastrophe beforehand because it personifies the ultimate power. Therefore, I predict that the Chorus will have the highest rate of the Indicative in its speech.

The Columbia School methodology applies a statistical skewing as the quantitative validation of predictions made for textual analyses. Reid (1995) states the following on the role of quantitative analysis in linguistic research:

At the sentence level the relevant data can be categorical facts about which there is no dispute; but beyond the sentence they usually involve statistical tendencies. Quantitative analysis is then the appropriate tool for isolating and formulating such tendencies. (Reid 1995: 116)

To validate my predictions, I counted all the instances of the Indicative and the Subjunctive, used by Antigone, Creon and the Chorus in the nominal, adverbial and relative subordinate clauses, and calculated the rate (percentage) of the Subjunctive for the examined leitmotifs-characters. In order to test the significance of the given results, I calculated the Z-value for each character. The Z-value shows whether the difference between the observed results (value) and the expected results (mean) is large enough to be statistically significant. Following Muller (1992: 91–108), the Z-value is calculated as follows:

- i. Calculate the expectation (mean) by dividing the overall corpus frequency of the Subjunctive by the number of all possible outcomes of the Indicative and the Subjunctive and then by multiplying the quotient by the number of the outcomes of the Subjunctive within a section:

$$\text{mean} = n(\text{outcomes in corpus})/n(\text{corpus}) * n(\text{outcomes in section})$$

- ii. Calculate the probability  $q$  that the Subjunctive will not occur in the corpus, according to the formula:

$$q = 1 - (n(\text{outcomes in corpus})/n(\text{corpus}))$$

- iii. Calculate the standard deviation ( $SD$ ) which is the square root of the product of the calculated results (mean) and the probability  $q$ :

$$SD = \text{sqrt}(\text{mean} * q)$$



iv. Calculate Z-value according to the formula:

$$Z = (\text{value} - \text{mean})/SD$$

The result is compared to a standard Z-table in Muller (1992: 175), according to which a significant Z-value must be greater than  $\pm 1.960$ . The probability  $p$  of the Z-value  $\pm 1.960$  is 0.05, which means that in 95 cases out of 100 the observed result is unlikely to have happened by chance. A positive Z-value means that the Subjunctive appears in a section more than would be expected. And vice a versa, a negative Z-value means that the Subjunctive is used less frequently in a section than would be expected statistically.<sup>7</sup>

The results of the count for my predictions for the play *Antigone* are presented in Table 1.

**Table 1.** From sign to text (*Antigone*): Non-random distribution of the Indicative vs. the Subjunctive for major characters

	Leitmotifs		
	Antigone	Creon	Chorus
Indicative	70	71	58
Subjunctive	34	22	5
Subjunctive (%)	32.7% : 23.7% : 7.9%		
Z*	2.070	-0.240	-2.970
	(Corpus is 348 instances of use: Subjunctive is used 85 times, Indicative – 263 times)		

\*The Z-value for the character of Antigone in Table 1 is calculated as follows:

- i. The expectation (mean) for Antigone is:  $\text{mean} = 85/348 \cdot (70 + 34) = 25$ .
- ii. The probability  $q$  that the Subjunctive will not occur in the corpus is:  $q = 1 - (85/348) = 0.756$ .
- iii. The standard deviation of the calculated variance is:  $SD = \sqrt{25 \cdot 0.756} = 4.347$ .
- iv. The Z-value for Antigone is:  $Z = (34 - 25)/4.347 = 2.070$ .<sup>8</sup>

7. One might argue that the Z-value is not adding anything to the presentation of the test results and that the percentages alone of the Indicative and the Subjunctive show a predicted skewing. However, both tests have different purposes. A percentage is a relative value, used to express a fraction of the whole. Percentages give an idea of the relationship between quantities. The Z-value is used to determine whether or not given results differ significantly from calculated results, i.e. to test a suggested hypothesis.

8. The calculated value is based on rounded numbers. Therefore, the exact outcome may differ from that in Table 1. For example, the exact Z-value for the character of Antigone will be 1.962. Nevertheless, it still exceeds the threshold of confidence.

The data in Table 1 present the results of the distribution of the Subjunctive and the Indicative for the three major characters of the play: Antigone, Creon and the Chorus. These results support my predictions and indicate a preference in the distribution of both moods for specific characters-leitmotifs. The rate of the Subjunctive drops from 32.7% in the speech of the most conflicting and disobedient character of Antigone to 23.7% in that of Creon, dissatisfied with his reign, and to 7.9% in that of the Chorus who manifests the confidence of the situation. The Z-value (Z) in Table 1 is greater than  $\pm 1.960$  for the two opposite characters, Antigone and the Chorus, who personify a clear-cut distinction between the revolt and the order, respectively. This value points out the significance of the predicted distribution. The positive Z-value for Antigone means that this character uses the Subjunctive more than would be expected, whereas the negative Z-value for the Chorus means that the Subjunctive appears in its speech less than would be expected. A negative Z-value for Creon is not statistically significant. This low result reflects the fact that the character of King Creon, unwilling to rule and forced to resolve a moral dilemma, does not embody a clear-cut distinction between the revolt and the order.

The observed distribution is less than 100% because the encoder is free to decide either to emphasize an alternative with the Subjunctive or to emphasize an occurrence with the Indicative. Reid (1983 [1979]) states the following on this matter:

[...] a skewing of less than 100% does not constitute a less than complete confirmation of the prediction, nor does it require an additional accounting of the short end of the skewing [...] before the results can be taken as confirming. Noncategorical skewings are to be expected in view of the fact that the deployment of meanings is determined by multiple, potentially conflicting factors.

(Reid 1983 [1979]:207)

The previous examples have shown that even the syntactic government of verbs regarding the choice of mood in the traditional sense of the term does not guarantee a 100% correlation.

#### 5.4 “From text to sign” approach

The “from text to sign” approach is based on Tobin’s semiotic view of a text as a sign in its own right. The major message of the text can be viewed as the meaning of the text-as-sign. The distribution of the language within the text can be regarded as the signal of the text-as-sign. For the opposition of the Indicative and the Subjunctive, this means that the meaning of the text will consistently motivate

the choice and the distribution of the moods, their sequences and co-occurrences. Consider Tobin (1995) on this matter:

The message of the text, functioning as a meaning of the “text as sign” involves a conflation of elements including the characters, the plot, the themes and leitmotifs that all function together within the larger system of the text. This approach involves the hierarchical descending order from text to context to system and sign.  
(Tobin 1995:63)

Tobin (1990, 1993, 1995) presents examples of the “from text to sign” approach, one of which is the analysis of the exceptional comparative form *curiouser and curiouser* in the text *Alice in Wonderland* (Carroll 1961:9) (cf. Tobin 1990:213–221). According to Tobin (ibid: 193–195), the synthetic forms ‘X-er/X-est’ that express the comparative and superlative degrees of English adjectives and adverbs are marked for the feature ‘Semantic Integrality’ while the parallel periphrastic forms ‘more + X/most + X’ performing this function are unmarked for this feature.

This strategy represents a *merging* of [a] quality (‘small’) with another form indicating a comparative or superlative degree (‘-er/-est’) to create a *new complex independent and integral unit* in the form of a ‘single word’: (‘smaller/est’).  
(Tobin 1990: 193–194)

As previously stated (ibid: 194), the periphrastic forms ‘more + X/most + X’ are unmarked for Semantic Integrality. Though this strategy does not mean “a physical [...] blending of linguistic signs to create a new single independent unit” (ibid), it does not necessarily imply the absence of their merging. Tobin further examines the choice of marked ‘X-er/X-est’ versus unmarked ‘more + X/most + X’ forms, as being motivated by the text itself. He makes the following prediction about their distribution in *Alice in Wonderland*:

The more *integral* a quality is to [the] text, the more suitable it is to collocate with linguistic signs marked for the distinctive feature of Semantic Integrality.  
(Tobin 1990:213)

The adjective *curious* can be considered as the cornerstone of the message of *Alice in Wonderland*. This is the most frequently used adjective in the text. It can also be associated “with every major *leitmotiv* within the text [...] either through the major characters in and out of Wonderland [...], or the scenes or places of events [...]” (Tobin 1990:214). According to Tobin (ibid), *curious* “encompasses and embodies the very essence and spirit of the entire text itself: i.e. is INTEGRAL to the message of the text”.

It is not surprising, therefore, that we find the ‘unusual’ form *curiouser and curiouser* marked for Semantic Integrality within this particular text [...]  
(Tobin 1990:214)

The “from text to sign” approach is represented schematically in Figure 2.

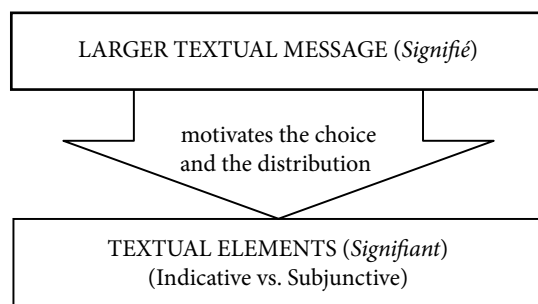


Figure 2. “From text to sign” approach

In this section, I postulate a textual message that can be associated with the invariant meanings of the Indicative and the Subjunctive. I expect that this message will consistently motivate the choice of one mood over the other throughout a text. The text that I have chosen for the “from text to sign” analysis is *Le Malentendu* ‘The Misunderstanding’ by Camus (1958).

### 5.5 *Le Malentendu* (The misunderstanding)

This play by Albert Camus is concerned with the absurdness and meaninglessness of human existence where people are unable to communicate with each other. The plot takes place in Bohemia where two women, Martha and her mother, keep a small hotel. They rob rich travelers, kill them and throw them in the river. The prodigal son and brother Jan, who returns home after twenty years, checks in at the hotel as a regular traveler, but tries in various subtle ways to reveal his identity to them. Despite this, the mother and sister do not recognize Jan. They rob and kill him. Only the next morning, do they find his identity card with the real name of their victim.

I propose the following hypotheses concerning the play and the role of the opposition between the Indicative and the Subjunctive in this text:

- i. From the very beginning of the play, the characters need to look for various ways and opportunities to establish connections with each other. However, they cannot find appropriate words and miss all the opportunities. Therefore, as follows from the title, the larger message of the text, viewed as a sign, deals with *people’s inability to communicate with each other*.
- ii. This message can be associated with the idea of the encoder’s commitment or avoidance to commit to an occurrence and, thereby, is directly related to the invariant meanings of the Indicative and the Subjunctive.

- iii. The Subjunctive, meaning ALTERNATIVE, implies ambiguity as well as a search for an alternative solution, the choice between two possibilities or hesitation, like Hamlet's "to be or not to be".<sup>9</sup> The Indicative, meaning OCCURRENCE, implies the inappropriateness of any alternative.

Based on i–iii above, I claim that the message of the text, viewed as a sign in its own right, motivates the distribution of the Indicative and the Subjunctive throughout the play in the following way:

- i. The more the characters look for alternative opportunities to communicate with each other or the more their words are ambiguous and uncertain, the more the Subjunctive will be used.
- ii. The less the characters search for such opportunities or the more their words are clear, precise and direct, the more the Indicative will be used.

*Le Malentendu* is a play, written in three acts, each of which is consistent with the distribution of the Indicative and the Subjunctive, motivated by the larger textual message. In the first act, Jan books a room as a regular traveler and decides to remain incognito in his mother and sister's hotel. He conceals his identity out of stubbornness. His wife Maria tries to dissuade him from this decision and proposes an alternative solution to him: to reveal his identity to his mother and sister. Though Maria prefers to be direct, she does not change Jan's mind. In this act as well, Jan's sister Martha persuades her mother to kill the traveler. She states this in a clear and direct manner, without mincing words. At the same time, Jan subtly tries to reveal his identity to his mother and sister, but he hesitates to do it directly and neither woman understands him. In other words, in the first act, I expect the multiple use of the Indicative, as in Examples (17)–(18), because both Jan and Martha reject any alternative when he addresses Maria, and she speaks with her mother and Jan.

- (17) Martha: Le crime est le crime, il faut savoir ce que l'on veut. Et il me semble que vous le SAVIEZ (I) tout à l'heure, puisque vous y avez pensé, en répondant au voyageur. (Camus 1958: 167)

'Martha: Crime is crime, and one should know what one is about. And, from what you've just said, it looks as if you HAD (I) [SAVIEZ] it in mind when you were talking to that traveller.' (Camus 1947: 102)

- (18) Jan: [...] Quand j'ai appris la mort de mon père, j'ai compris que j'AVAIS (I) des responsabilités envers elles deux et, l'ayant compris, je fais ce qu'il faut. Mais je suppose que ce n'EST (I) pas si facile qu'on le DIT (I) de rentrer chez soi et qu'il FAUT (I) un peu de temps pour faire un fils d'un étranger. (Camus 1958: 173)

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9. Hamlet's famous "to be or not to be" has been suggested by Tobin in personal conversation.

'Jan: [...] When I learnt about my father's death I realized I HAD (I) [AVAIS] duties towards these two women and now, as a result, I'm doing what it's right for me to do. But evidently it IS (I) [EST] not so easy as people THINK (I) [DIT], coming back to one's old home, and it TAKES (I) [FAUT] time to change a stranger into a son.'  
(Camus 1947: 107)

I also expect the multiple use of the Subjunctive in the first act, as in examples (19)–(20), because Jan, the mother and Maria look for opportunities to make themselves understood. However, all their attempts are in vain because of the uncertainty or ambiguity in their words.

- (19) La mère: Je suis lasse, en effet, et j'aimerais qu'au moins celui-là SOIT (S) le dernier.  
(Camus 1958: 168)

'The mother: I'm tired, that's fact. Anyhow, I'd like this one to BE (S) [SOIT] the last.'  
(Camus 1947: 103)

- (20) Maria: Donnons-nous au moins cette chance que quelqu'un VIENNE (S) et que je te FASSE (S) reconnaître malgré toi.  
(Camus 1958: 171)

'Maria: Do please let us take the chance of someone's COMING (S) [VIENNE] and my TELLING (S) [FASSE] who you are.'  
(Camus 1947: 105)

In the second act, Jan wants his mother and sister to recognize him and looks for different (alternative) ways and opportunities to reveal his identity. Jan tries to choose appropriate words to be recognized, but he cannot bring himself to tell the truth to them directly. He prefers to keep silent relying on their intuition. In this section as well, the mother implies to Jan what will happen to him, but he does not understand her either. Bespaloff (1962) states the following on the second act of *Le Malentendu*:

There is almost no sentence in the second act which does not have a different meaning for the one who speaks it and for the one who hears it.

(Bespaloff 1962: 105)

Therefore, I expect the frequent use of the Subjunctive in this act, as in Examples (21)–(22).

- (21) Jan: [...] Mais sans doute comprendrez-vous que tout ici me PARAISSE (S) singulier, le langage et les êtres. Cette maison est vraiment étrange.  
(Camus 1958: 214)

'Jan: [...] Still perhaps you'll let me say that everything here STRIKES (S) [PARAISSE] me as very strange; the people and their way of speaking. Really this is a queer house.'  
(Camus 1947: 136)

- (22) Jan: Je comprends que vous PARAISSEZ (S) surprise. Mais ne croyez pas surtout que vous SOYEZ (S) responsable de quelque chose.  
(Camus 1958: 219)
- ‘Jan: I quite understand your LOOKING (S) [PARAISSEZ] surprised. But please don’t imagine you ARE (S) [SOYEZ] in any way responsible for my sudden change of plan.’  
(Camus 1947: 139–140)

The third act deals with the dreadful consequences of Jan’s choice. Maria takes it on herself to go to the hotel and to notify the mother and sister that Jan is their son and brother. However, she learns that they have killed her husband, their own flesh and blood. Maria is shocked by Jan’s death, and Martha represents it as a *fait accompli*. Even if she knew that he was her brother, this would not have changed anything. The mother commits suicide when she realizes that has killed her own son. And Martha follows her because she suffers from loneliness. Therefore, I expect the multiple use of the Indicative in the third act, as in Examples (23)–(24).

- (23) La mère: C’est la punition, Martha, et je suppose qu’il EST (I) une heure où tous les meurtriers SONT (I) comme moi, vidés par l’intérieur, stériles, sans avenir possible.  
(Camus 1958: 235)
- ‘The mother: No doubt this is my punishment, and for all murderers a time COMES (I) [EST] when, like me, they ARE (I) [SONT] dried up within, sterile, with nothing left to live for.’  
(Camus 1947: 154)
- (24) Maria, *toujours avec le même effort*: Aviez-vous appris déjà qu’il ÉTAIT (I) votre frère?  
(Camus 1958: 247)
- ‘Maria: [Still controlling herself with an effort.] Had you learnt he WAS (I) [ÉTAIT] your brother when you did it?’  
(Camus 1947: 163)

To validate my predictions, I counted all the instances of the Indicative and the Subjunctive, used in the nominal, adverbial and relative subordinate clauses in each act. I also calculated the rate (percentage) and the Z-value of the Subjunctive for each act. The results of the count for my predictions for the play *Le Malentendu* are presented in Table 2.

**Table 2.** From text to sign (*Le Malentendu*): Non-random distribution of the Indicative vs. the Subjunctive for different acts of the play

	People’s inability to establish communication with others		
	Act I	Act II	Act III
Indicative	138	66	115
Subjunctive	38	28	20
Subjunctive (%)	21.6% : 29.8% : 14.8%		
Z	0.185	2.015	–1.883
	(Corpus is 405 instances of use: Subjunctive is used 86 times, Indicative – 319 times)		

Overall, the data in Table 2 support my predictions. They show that the Indicative and the Subjunctive are consistently distributed for the different acts of the play, associated with the encoder's commitment or avoidance to commit to an occurrence. The rate of the Subjunctive is 21.6% for the first act. This rate increases up to 29.8% for the second act that emphasizes the search for alternative opportunities and drops down to 14.8% for the last act that deemphasizes this search and presents the dreadful consequences of Jan's ambiguity and uncertainty. The first act does not represent a clear-cut distinction between the search for alternative opportunities and the rejection of any alternative, which explains its low Z-value (Z). At the same time, the Z-values for the last two acts, which symbolize this clear-cut distinction, may be considered statistically significant. The Z-value for the second act is greater than the threshold of  $\pm 1.960$ . The Z-value of  $-1.883$  for the third act has, nevertheless, the probability  $p$  of 0.0597, i.e. a 94% confidence level according to a standard Z-table (cf. Muller 1992: 175). This means that in 94 cases out of 100, the observed distribution is not random. This level of significance is acceptable for my less rigorous count. The positive Z-value for the second act means that here the Subjunctive is used more than would be expected. The negative Z-value for the third act means, on the contrary, that the Subjunctive appears here less than would be expected.

## 6. Summary and conclusions

To summarize, in this study, I have used the Columbia School sign-oriented framework to analyze the distribution of the Indicative and the Subjunctive in French. I have showed that the choice of both moods is motivated by a semantic distinction between their invariant meanings. I have postulated that both moods form the Occurrence System, within which the Indicative invariably means OCCURRENCE, whereas the Subjunctive invariably means ALTERNATIVE TO OCCURRENCE CONSIDERED. These meanings not only account for the consistent use of the Indicative and the Subjunctive in individual sentences, but also allow us to make predictions about their distribution within texts. I have presented two sign-oriented perspectives on the textual analysis that indicate how writers exploit the semantic opposition of the Indicative and the Subjunctive to create a textual coherence. The texts have been examined from bottom to top ("from sign to text" analysis) and from top to bottom ("from text to sign" analysis). In the first case, I have found that the Indicative and the Subjunctive consistently appeared in specific contexts that could be associated with messages, contributed to by the invariant meanings of both moods. The consistent appearance of the Indicative and the Subjunctive created a sense of coherence and cohesion in the examined text. In the second case, the consistent favoring of the Subjunctive for specific sections of the text and



the Indicative for others has been motivated by the larger textual message that the writer intended to convey. The textual analyses have been confirmed statistically, by calculating the rate (percentage) and the Z-value of the Subjunctive.

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# Semantic regularities of the so-called irregular Internal Vowel Alternation (IVA) nominal (*umlaut*) and verbal (*ablaut*) forms in Old and Modern English\*

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*How does one cope, systematically, with the apparent chaos of the modern world? This question was being asked in a variety of fields, and the replies which Saussure gives – that you cannot hope to attain an absolute or Godlike view of things but must choose a perspective, and that within this perspective objects are defined by their relations with one another...*  
(Culler 1976: XV)

The Internal Vowel Alternation (IVA) system is considered to be “irregular” because it appears in a limited number of noun plurals (e.g. *foot-feet*) and Past Tense verb forms (e.g. *give-gave*) that have “survived” in Modern English from a more prevalent and productive process in Old English. Following a sign-oriented analysis of language, we postulate that the IVA constitutes a meta-system composed of signals (*signifiants*) that are connected to invariant meanings (*signifiés*) in a Saussurean sense. First, the IVA forms are systematically opposed phonologically and iconically: the IVA nominal forms undergo a **fronting** (originally called *umlaut*) process (“moving forward”/or increasing in the plural) while, conversely, the IVA verbal forms (originally called “strong” verbs with *ablaut*) undergo a **backing** process (“moving back in time” for the Past Tense). Secondly, the English IVA nominal and verbal forms are systematically motivated semantically and share Common Semantic Denominators (CSDs). All the nominal IVA forms have a marked distinctive semantic feature of “Semantic Integrality” (Tobin 1990, 1994/[1995]) and all the verbal IVA forms are marked by the distinctive semantic feature of “Result” (Tobin 1993a). Moreover, the various sub-classes of the more IVA nominal and verbal systems also share messages reflecting CSDs – and the more similar these IVA sub-classes are

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phonologically the closer their CSDs are semantically. Thus, our study connects the form-phonology and the meaning-semantics of the so-called irregular IVA forms and presents them as a full-fledged system of linguistic signs in English.

## 1. Introduction

Old English and Modern English are quite distinct typologically from each other (synthetic vs. analytic); lexically (primarily Germanic vs. approximately 50% Latinate and Germanic) and morphologically (having complex formal gender, case and other declension systems vs. having no real formal gender, case and other declension systems). Modern and Old English may even be compared and contrasted as if they are two separate and diverse languages.

*Internal Vowel Alternation* (IVA) is a morpho-phonemic process which can be found in many language families. Modern English IVA forms comprise a very small group, and therefore, are commonly (and inaccurately) regarded as “irregular” Noun Plurals (e.g. ‘tooth-teeth’, ‘man-men’) and “irregular” Past Tense verb forms (e.g. ‘win-won’, ‘freeze-froze’). While, historically, in Old English as a cognate language of Germanic, the IVA was a regular process in both systems: the nominal and verbal. Even-Simkin & Tobin (2009a, 2010b) demonstrated that the nominal and verbal IVA forms are iconically and phonologically systematic. That is, the opposed phonological processes of IVA: (a) nominal forms display a kind of *fronting process* (*umlaut*) (from a further back to a more front vowel) (iconically: “adding new entities” – metaphorically “making room for more or moving forward”) for indicating Plural while, (b) conversely, verbal forms present a kind of *backing process* (an *ablaut* vowel gradation) (from a further front vowel to a more back vowel) (iconically: from non-past to past – “moving back in time”) for indicating Past Tense, can distinguish the nominal from the verbal forms. The data indicate that in Modern English IVA still maintains the same systematic phonological-iconic processes as in Old English despite the multiple historical changes in the phonology of English language. Moreover, in addition to this phonologically-iconic system, we have also found that different nominal and verbal IVA classes have their own COMMON SEMANTIC DENOMINATORS (CSDs) in both Old and Modern English. Thus, in spite of the multiple diversities in Old and Modern English, mentioned above – by following a sign-oriented analysis – we maintain that the different classes of phonological forms are motivated by common semantic features. The sign-oriented definition of language underlying this approach is that language is a “system of systems composed of various sub-systems (revolving around the notion of the linguistic sign) which are organized internally and systematically related to each

other and used by human beings to communicate” (Tobin 1990: 47). Following this sign-oriented definition of language we maintain that it is still possible to uncover covert systematic phonological *cum* semantic similarities in these complex IVA systems which on the surface are neither apparent nor obvious.

This study presents a sign-oriented linguistic analysis which shows the regular phonological and semantic nature of the IVA system and sub-systems in Plural nominal and Past Tense verbal formations in English which are generally considered to be irregular. Our analysis is further supported by the additional first language (L1) acquisition data, experimental studies, and historical evidence that have been previously discussed in Even-Simkin & Tobin (2010b). As previously mentioned, even though the IVA process comprises a relatively small number of nominal and verbal forms and is considered irregular in Modern English today, originally, it was a prevalent and productive process in Old English as well as in Indo-European and other language families. Thus, it is not surprising that we may still trace and observe the systematic iconic-phonological and semantic nature of the various IVA processes both in nominal and verbal forms.

## 2. IVA through the sign-oriented perspective

This study uncovers the covert IVA semantic systems that underlie the phonological nominal and verbal IVA processes in a diachronic analysis of Old and Modern English. We maintain that each sub-system of IVA for both the nominal Plural and the verbal Past Tense forms (*signifiants*) has its own Common Semantic Denominator (*signifié*). This feature of the intrinsically related nature of both the forms (*signifiants*) and their meanings (*signifiés*) is the fundamental idea in the sign-oriented definition of language. For example, Tobin (1990: 39–40) discusses the following fundamental characteristics of language inspired by de Saussure (1959/[1916]), who is considered to be the founder of modern linguistics and semiotics, in particular:

Language, ... is not reducible to phonological aspects alone, but must also always be related to signification, in the form of: ... a meaning, an idea, a concept, what de Saussure refers to as a *signifié*, or *invariant meaning* ....

Indeed, semiotically speaking, the very motivation for language is the creative creation of communication, the presentation of ideas and information in the form of complex bipartite linguistic signs each of which is composed of a signal and an invariant meaning which are united together to form an inseparable unit like the two sides of a piece of paper.

Language can also be compared with a sheet of paper; thought is the front and sound is the back; one cannot cut the front without cutting the back at the same time; likewise in language; *one cannot divide sound from thought nor thought from sound*; the division could be accomplished only abstractedly, and the result would be either pure psychology or pure phonology.

(de Saussure 1959: 113 [italics Y.T.])

Not unsurprisingly, de Saussure's concept of the linguistic sign directly reflects his view of language: a unit where the sound (or signal) in the form of concrete morphological forms or more abstract zero morphology or word order (the *signifiant* or 'signifier') is inseparably united with a concept in the form of an invariant meaning (the *signifié* or 'signified').

...

Thus language should be studied as a system of complex units composed of articulatory-auditory elements – signals – which are further combined with concepts – invariant meanings: i.e. *linguistic signs*.

The sign then becomes the theoretical unit of linguistic analysis combining and integrating all of the fundamental physiological and psychological aspects of language within a single unit. By combining all the elements of sound and meaning and their relationships to each other into a single unit and by studying the relationships of these units, we can abandon the traditional methods of separating language into autonomous and independent levels of sounds, forms, their arrangements and their meanings: phonology-morphology-syntax-semantics, etc.

In the sign-based framework of this study, we show that “there might be at least a slight semantic distinction between any physically distinct forms [which] [E.E-S & Y.T] arises from the very concept of the linguistic sign, which serves a basis of the semiotic linguistic theory” (Gorlach 2000: 270). Gorlach (2000, 2004) convincingly showed that there is a semantic distinction between the two alternative word order variants of phrasal verbs: e.g. “Eat up the apple” versus “Eat the apple up” which is also iconic. When the preposition appears discontinuously from the verb – in final position – the message is always marked for the semantic feature RESULT whereas in the alternative variant where the preposition appears continuously juxtaposed with the verb the message is unmarked or neutral for the distinctive semantic feature RESULT. Gorlach (2000: 271) further concludes that “a change of signal (form) should bring about some change in concept (meaning), and *vice versa*, i.e., there should be internal reason (motivated by the meaning implied) for any change of external signal”.

Similar to Gorlach, we believe that differences in form imply differences in meaning which may be iconic. Thus, we maintain that any systematic changes of

an IVA form signify alterations in meaning. Our position concerning the corresponding link between the form and meaning of a linguistic sign and within linguistic sign systems is similar to the one formulated by Bolinger (1977: ix–x) that: “any word which a language permits to survive must make its semantic contribution; and that the same holds for any construction that is physically distinct from any other construction”. Similar to Bolinger, Penhallurick (1987: 104) states that:

There are, in fact, strong reasons for assuming that the normal relationship between form and meaning, particularly with grammatical forms, is one-to-one. This is the normal relation between form and meaning in all other systems of communication, whether human or not. If human languages are in some fundamental sense systems of communication, then we should expect them to share this basic characteristic with other such systems.

We view each kind of IVA pattern as a distinct form, which is related to a particular meaning. In other words, we analyze language as a communicative tool, which is based on the system of systems, where a linguistic sign is a primary unit of linguistic analysis, which assumes a strict relationship between form and meaning. As Tobin (1990: 37–39) specifies, Saussure’s scheme of sign-oriented linguistic analysis is ultimately based on the linguistic sign:

The linguistic sign, itself, is a deceptively simple concept with far-reaching theoretical and methodological implications. ...

...

De Saussure’s conclusion, ... was that one first must postulate a unit of analysis, reflecting a point of view, or a way of approaching and analyzing the data in order to define and determine what the data are. It is this plethora of possible viewpoints, the numerous and diverse potential ways of approaching language which constitute the fundamental problem of linguistic analysis. The linguistic signs of a language and their relationships are not known in advance and must be postulated. In this respect, linguistic signs differ from the preconceived categories of sentence-oriented approaches which present logical or other categories related to the sentence and its component parts to which linguistic data are supposed to fit.

Thus, we claim that Saussure fundamentally advocated the replacement of the sentence-oriented, traditional grammatical categories in favor of the linguistic sign. Saussure’s concept of the linguistic sign as Eccardt (2006: 288) puts it, is “a psychological entity that united a sound image [form][E.E-S & Y.T] with a concept [meaning][E.E-S & Y.T]”. Thus, sign-oriented or semiotic analysis may provide not merely a description of the linguistic units, but rather may present an



explanation of them in linguistic analysis in terms of the human and communication factors, since language as a communicative device reflects the nature of human beings. Following Tobin (2006:88), the “semiotic act of communication can be seen as a “mini-max” struggle [between the human and communication factors in][E.E-S & Y.T]: the desire to create maximum communication with minimal effort”. This axiom underlies the Columbia School (CS) approach (e.g. Contini-Morava & Sussman Goldberg 1995; Contini-Morava & Tobin 2000; Contini-Morava et al. 2004; Diver 1975, 1995; Davis et al. 2006; Reid et al. 2002; Klein-Andreu 1983; Tobin 1990, 1993a, b, 1994[1995]) with the theory *Phonology As Human Behavior* (PHB) as representing the phonological aspect of this CS approach (e.g. Diver 1979, 1993; Davis 1987 [1984]; Tobin 1997, 2009), which “can explain [the motivation of] the non-random [phonological] distribution of sounds”(Tobin 2006:66 [E.E-S & Y.T]). Following the sign-oriented CS-PHB theory, we study each kind of IVA as a phonological unit that can be semantically categorized and sub-categorized in both the nominal and verbal systems. Thus, we will offer a new analysis of the so-called irregular Plural nominal and Past Tense verbal formations in English, where we link a form to an invariant meaning. In the next section, we will verify this prediction and further show that the more similar the IVA forms phonologically the closer their CSDs and invariant meanings.

### 3. Historical background

Historically, English had several alternative systems to indicate nominal Plural and Past Tense formation (Even-Simkin & Tobin 2009a, 2010b). However, in both nominal and verbal syntactic systems there were two IVA processes first labeled by Jakob Grimm as *Umlaut* in nominal forms and *Ablaut* in verbal forms. There has much discussion in the literature concerning these IVA systems. For example, Lass & Anderson (2010[1975]: 122) claim, the nominal mutations:

... through various processes of grammar simplification ... tended to get lost ... So that most of the relics of umlaut that are left to us are in contexts like noun/denominative verb pairs (e.g. *food:feed, blood:bleed*), or the plurals of the old monosyllabic consonant stem nouns (e.g. *foot:feet, man:men*) ...

Following Quirk & Wrenn (1955: 151) “i-mutation, [that is][E.E-S & Y.T] shared in varying degrees by all Gmc [Germanic][E.E-S & Y.T] languages except Gothic, had been completed in OE [Old English][E.E-S & Y.T] by the time of the earliest written records”. Therefore it is very important to study the etymology of the IVA

forms that have been retained in Modern English in order to better understand the history and development of the modification of the nominal IVA forms over time. The second major IVA pattern is found in the Past Tense formations, termed *ablaut*, which in some literatures is also known as a vowel-gradation. Following Emerson (1910:229) “gradation is characteristic of the Teutonic verb”. Similar to Emerson, Quirk & Wrenn (1955:130) claim that

... root-gradation was used in IE [Indo European][E.E-S & Y.T] as one of the means of conjugating verbs, and it is as a development of this practice that the Gmc [Germanic][E.E-S & Y.T] (and therefore the OE [Old English] [E.E-S & Y.T]) vocalic verbs are differentiated in their tenses to a large extent by variation of their root-vowel in accordance with regular series [of seven classes] [E.E-S & Y.T].

For example, “gradation ... is found to some extent in other members of the Indo-European family [like Greek, where the root of the verb may appear][E.E-S & Y.T] ... with the vowels *ei, oi, i*, in different stems” (Emerson 1910: 229). Thus, all of the above IVAs in both nominal and verbal systems do not represent irregularities of the Plural and Past Tense systems in English but are the remnants of the former declension and conjugation systems.

It is well-known that the complex synthetic morphology of Old English was leveled and drastically reduced in Middle English resulting in Modern English. Thus, from the point of view of morphology and typology, Old and Modern English may be classified as two separate and different languages. Baugh (1963: 59) states that “[t]he period from 450 to 1150 is known as Old English [and][E.E-S & Y.T] ... sometimes described as the period of full inflections”, that is, following Baugh (1963:64) Old English is a synthetic language, whereas Modern English is the analytic one. Moreover, the lexical component of Modern and Old English differs entirely. As for example, Baugh (1963:63) points out:

A ... feature of Old English ... is the absence of those words derived from Latin and French which form so large a part of our present [Modern English] [E.E-S & Y.T] vocabulary. Such words make up more than half of the words now in common use. ... The vocabulary of Old English is almost purely Teutonic [West Low Germanic] [E.E-S & Y.T].

However, in spite of all of these fundamental lexical and grammatical differences between Old and Modern English both languages share the nominal and verbal IVA processes. The following sections present the phonological and semantic consistency of the IVA system over time.

4. Phonological systematization of IVA in nominal plural forms

All Modern English IVA NOUN PLURALS have a similar historical phonological background:

It is closely related to the raising of *e* to *i* ... inasmuch as it is the direct result of the influence of *i* or *j* on the vowel in an immediately preceding syllable. By *i*-mutation, Pr.OE [Primitive Old English][E.E-S & Y.T] *ǣ* (before nasals), *æ*[extra short][E.E-S & Y.T], *ā*, *ō/ǫ*, *ū/ȳ* are fronted or raised to mid or high front vowels. (Quirk & Wrenn 1955: 151; Emerson 1910; Hulbert 1963)

Thus, the non-arbitrary nature of the instances of the IVA NOUN PLURALS may be drawn from their common historical background, i.e. *i*-mutation which points to the certain kind of phonological *fronting* process. Even-Simkin & Tobin (2009a, 2010b,c) describe and summarize the various degrees of *fronting* found in all the IVA nominal plurals. The Old English IVA nouns in Table 1 illustrate the consistency in the phonological fronting declension in Old English IVA nominal forms.

Table 1. Nominal Old English forms with IVA

Old English singular form with the vowels: /ō, ā, ū, ēō/	Old English plural form with the vowels: / ē, æ, γ, iē/	Modern English form	Fronting process in Old English forms(✓)
<i>mann</i>	<i>menn</i>	man	/a/ → /e/ = (✓)
<i>wīfmann</i>	<i>wīfmenn</i>	woman	/a/ → /e/ = (✓)
<i>fōt</i>	<i>fēt</i>	foot	/ō/ → /ē/ = (✓)
<i>tōð</i>	<i>tēð</i>	tooth	/ō/ → /ē/ = (✓)
<i>gōs</i>	<i>gēs</i>	goose	/ō/ → /ē/ = (✓)
<i>brōc</i>	<i>brēc</i> (OE)/ <i>brèche</i> (ME)	breeches, trousers, pants	/ō/ → /ē/ = (✓)
<i>bōc</i>	<i>bēc</i>	book	/ō/ → /ē/ = (✓)
<i>fēond</i>	<i>fīend/fynd</i>	foe	/ēō/ → /iē/ or /y/ = (✓)
<i>frēond</i>	<i>friend/frynd</i>	friend	/ēō/ → /iē/ or /y/ = (✓)
<i>hōnd</i>	<i>hēnd</i>	hand	/ō/ → /ē/ = (✓)
<i>gōte</i>	<i>gēt</i>	goat	/ō/ → /ē/ = (✓)
<i>hnute</i>	<i>hnyte</i>	nut	/u/ → /y/ = (✓)
<i>burg</i>	<i>byrg</i>	fortress	/u/ → /y/ = (✓)
<i>āc</i>	<i>æc</i>	oak	/ā/ → /æ/ = (✓)
<i>mūs</i>	<i>mys</i>	mouse	/ū/ → /y/ = (✓)
<i>lūs</i>	<i>lys</i>	louse	/ū/ → /y/ = (✓)
<i>cū</i>	<i>cγ</i>	cow	/ū/ → /y/ = (✓)

This characteristic fronting process of different degrees has been retained in all the Modern English IVA NOUN PLURALS presented in Table 2.

Table 2. Nominal Modern English forms with IVA

Modern English singular form with the vowel sounds: [ou, au, æ]	Modern English plural form with the vowel sounds: [e, ii, ai]	Fronting process in Modern English forms(✓)
<i>man</i>	<i>men</i>	[æ] → [e] = (✓) <sup>1</sup>
<i>woman</i>	<i>women</i>	[æ] → [e] = (✓)
<i>foot</i>	<i>feet</i>	[ou] → [ii] = (✓)
<i>tooth</i>	<i>teeth</i>	[ou] → [ii] = (✓)
<i>goose</i>	<i>geese</i>	[ou] → [ii] = (✓)
<i>mouse</i>	<i>mice</i>	[au] → [ai] = (✓)
<i>louse</i>	<i>lice</i>	[au] → [ai] = (✓)

Table 2 clearly shows that Modern English IVA NOUN PLURALS present various degrees of a phonological *fronting* process, like in ‘*tooth, foot, goose*’ → ‘*teeth, feet, geese*’, (from long back vowels to front vowels), ‘*man, woman*’ → ‘*men, women*’, (from medium-low front tense vowel /æ/ to the medium or medium-high front lax vowels /e, i/ for the plural), and ‘*louse, mouse*’ → ‘*lice, mice*’ (from central-back diphthongs to central-front diphthongs). This regularity and consistency in the nominal IVA system clearly points to the non-arbitrariness of the IVA process especially in light of its opposition to the converse *backing* process found in the verbal IVA system, thus providing a clear-cut phonological opposition between these two IVA processes. As previously mentioned, this phonological *fronting process* in the declension of IVA NOUN PLURALS is also iconic in pointing metaphorically for the addition of plural, i.e. ‘moving forward’(fronting). Moreover, it is worth noticing that these IVA NOUN PLURALS, as the remnants of the *i*-umlaut follow the rule, which is summarized by Lass & Anderson (2010[1975]: 119) in the following way:

[t]he basic effects of the umlaut may be summed up as follows: in a certain context, back vowels front .... [and] [i]f the vowels undergoing umlaut are nonback and low, they raise.  
[E.E-S & Y.T]

1. Despite the fact that both [æ] and [e] are front vowels the low front vowel [æ] is still relatively further back than the mid-front vowel [e]. In our discussion we refer to any and all relative degrees of the *fronting* process. It should also be remembered that /a/ is a low-central vowel in articulation with the acoustic qualities of a back vowel which is why we later refer to it as a low central-back vowel.

The present analysis argues in favor of the non-arbitrary character of the IVA Noun Plurals that is evident in the phonological regularity and iconicity of IVA, which has a parallel semantic consistency – a common semantic denominator – embodied in distinctive semantic feature *Semantic Integrality* (Tobin 1990, 1994[1995], Even-Simkin & Tobin 2010a,d), which will be discussed below.

5. The semantically marked feature of IVA NOUN PLURALS

*“It is clear that the Germanic irregular nouns of English, although formally and etymologically highly heterogeneous, pattern along lines of semantic similarity.”*  
(Baayen & Moscoso del Prado Martín 2005:668; Quirk, Greenbaum, Leech & Svartvik 1985)

There is a very small number of the IVA NOUN PLURALS in Modern English compared with Old English (e.g. Quirk & Wrenn (1955); Hulbert (1963); Emerson (1910); Wright (1908). However, the reduced number of IVA nouns in Modern English should not be viewed as random exceptions to the prevailing and, therefore, generally accepted as a “regular” (-s/es) NOUN PLURAL formation. But rather these IVA instances, are the remnants of the historical plural declension system, represent and still function as a system of linguistic signs that unites both: *form* and *meaning*. We claim that all the IVA nominal forms share the marked distinctive feature *Semantic Integrality* originally presented by Tobin (1990, 1994[1995]:71–72) as:

The marked feature [that]... is based on the assumption that there are two alternative ways of perceiving [a plurality of] entities in space, time, or existence either as discrete entities: ( $a + b = a + b$ ) or as potentially discrete entities perceived as part of a continuous set: ( $a + b = [ab]$ ) [as illustrated in Figure 1].  
[E.E-S & Y.T]

...

[Figure 1 – Semantic Integrality]

Alternative WAYS OF PERCEIVING ENTITIES IN A SPATIO-TEMPORAL-EXISTENTIAL CLINE:
$a + b = a + b$ [discontinuous space, time, or existence]
or
$a + b = [ab]$ [continuous space, time, or existence]
SEMANTIC INTEGRALITY: THE PERCEPTION OF POTENTIALLY DISCONTINUOUS ENTITIES VIEWED IN A CONTINUOUS SET

This marked distinctive feature of *Semantic Integrality* (SI) may explain linguistic concepts in the lexicon and grammar in a systematic manner. That is, this marked feature reflects the perception of entities in time, space, and existence, and revolves around the alternative ways in perceiving entities: either as an integral unity

perceived in a continuous space ( $a + b = ab$ ) or as separate and independent entities occupying a discontinuous space ( $a + b = a + b$ ). This distinctive marked feature of SI has been already applied in the analyses of, for example, *mass* vs. *count* numbers in English, adverbs, verbs, quantifiers, the dual number in Hebrew as well as in other languages. The application of SI in the study of the singular versus the dual versus plural across languages has indicated that “many of the so-called irregularities in the number system appear to be less than arbitrary” (Tobin 1994 [1995]: 78) and SI has explained the different cases of the so-called irregular NOUN PLURALS. Then, it is not surprising that the IVA Plurals, as being a part of this “irregular” NOUN PLURAL list, likewise the *mass* vs. *count* numbers in English, may be also explained in terms of SI. For example, following Tobin’s (1994[1995]: 76) argument:

One of the most widely discussed problems in English grammar is the large number of exceptions to the so called singular-plural rule. There have been few attempts (most of them sign-oriented) to make empirical sense out of these irregularities including Hirtle (1982), Reid (1991) and Wickens (1992). Many of these well-known exceptions can be explained by the marked distinctive feature *Semantic Integrality*:

- i. The fundamental problem of *mass versus count nouns* involves the alternative perception of entities perceived in discontinuous space (plural) versus continuous space (singular). Most of the so-called mass nouns are similar to the dual number Hebrew ... and represent potentially plural or discrete entities which are alternatively perceived in continuous space (e.g. *sand, sheep, deer, fish*). Yet, when we talk about specific kinds of sand or different species of sheep, deer or fish (i.e. view them as discrete entities in discontinuous space) we will use the plural (*sands, sheeps, deers, fishes*).
- ii. We can also have *two alternative plural forms for the same lexical item*. The singular *person* can be pluralized either as *people* or *persons*. The so-called plural *people* indicates the perception of an integral group which, in turn, can alternatively be viewed non-integrally: *the peoples of Africa*. The plural *persons*, on the other hand, perceives and focuses on discrete individuals such as VIPs (*Very Important Persons*).

The fundamental idea here is that nouns like *person-people* (*Suppletion* system) and the *mass* nouns (*Syncretism* system) (cf. Even-Simkin & Tobin 2009a, 2010b) are not exceptions to the so-called regular rule (adding the suffix *-s/es*) in Plural declension, but rather are semantically motivated systems. Furthermore, Reid’s (1991) Entity Number System extensively examines the *mass* versus *count* noun system in English in terms of the formula: (a) MORE THAN ONE – in a reference to several entities, where each item is within discrete boundaries, and (b) ONE – that refers not necessarily to discrete entities but rather to the heterogeneous nature of the unbound or no longer separate items. Bob De Jonge (pc) suggests the

following schema for this phenomenon: [a] + [a] = [a]-s for the so-called regular NOUN PLURAL formations and [aa] = [ä] for the *mass* NOUN PLURALS. All of the above support the non-arbitrary feature of the so-called irregular NOUN PLURALS, thus further emphasizing the basic principle which underlies our study, i.e. “linguistic signs constitute a language-specific system of semantic classification”(Reid 1991:48; Lakoff 1987; Whorf 1962; Saussure 1959 [1916]). In Table 3, we propose the Common Semantic Denominator (CSD), which encompasses the complete list of the IVA NOUN PLURALS. This Table (3) presents the Modern English IVA forms, as well as the Old English IVA NOUN PLURAL forms like *nut*, *friend* or *oak*, that in Modern English moved to the prevalent system of Plural declension (i.e. *lexical item* + -s/es).

Table 3. CSD of the nouns with IVA in Plural declension in English

Old English singular forms of nouns with the following vowels: /ō, ā, ū, ēō/ 	Old English plural forms of nouns with the following vowels: / ē, æ, γ, iē/ 	Modern English forms of these nouns	CSD of nominal IVA class
<i>mann</i>	<i>menn</i>	man	Semantic Integrity (SI)
<i>woman</i>	<i>womenn</i>	woman	
<i>fōt</i>	<i>fēt</i>	foot	
<i>tōð</i>	<i>tēð</i>	tooth	
<i>brōc</i>	<i>brēc</i> (OE)/ <i>brēche</i> (ME)	breeches, trousers, pants	
<i>bōc</i>	<i>bēc</i>	book	
<i>fēōnd</i>	<i>fīend</i> / <i>fynd</i>	foe	
<i>frēōnd</i>	<i>frīend</i> / <i>frynd</i>	friend	
<i>hōnd</i>	<i>hēnd</i>	hand	
<i>gōs</i>	<i>gēs</i>	goose	
<i>gōte</i>	<i>gēt</i>	goat	
<i>mūs</i>	<i>mys</i>	mouse	
<i>lūs</i>	<i>lys</i>	louse	
<i>cū</i>	<i>cy</i>	cow	
<i>hnute</i>	<i>hnyte</i>	nut	
<i>burg</i>	<i>byrg</i>	borough (Hulbert 1963) or fortress (Quirk & Wrenn 1955)	
<i>āc</i>	<i>āc</i>	oak	

As observed in Table 3, all of the IVA NOUN PLURALS are marked by: (1) the IVA fronting process and (2) the same CSD, which is realized in the marked semantic distinctive feature: *Semantic Integrity*. Thus, the IVA fronting processes serves as the *signifiant* and the CSD-SI serves as the *signifié* of a full-fledged sign

system. By the same token, one may also interpret Reid (1991) as a sign-system: the so-called regular NOUN PLURAL system (noun + (-s)) – (*signifiant*), has its own meaning (*signifié*): MORE THAN ONE.

Furthermore, it is possible to interpret the realization of the *signifié* CSD-SI of the nominal IVA system in various ways. One such way is to further sub-divide the IVA nouns into three sub-systems illustrated in Table 4 although other potential alternative interpretations of the CSD-SI are also possible.

Table 4. CSD and three classified semantic domains of the IVA NOUN PLURALS in English

No. group	Old English singular forms of nouns with the following vowels: /ō, ā, ū, ēō/	Old English plural forms of nouns with the following vowels: / ē, æ, y, iē/	Modern English forms of these nouns	Classified semantic domains per group	CSD of nominal IVA class
1	mann womann fōt tōð brōc  bōc fēōnd frēōnd hōnd	menn womenn fēt tēð brēc(OE)/ brēche(ME)  bēc fiēnd/fynd friēnd/frynd hēnd	man woman foot tooth breeches, trousers, pants book foe friend hand	nouns that generally describe the potentially two/manifold units or sets, which may be either identical or complementary	(+SI)
2	gōs gōte mūs lūs cū	gēs gēt mys lys cy	goose goat mouse louse cow	nouns that refer to animals that live near human beings communally in groups or herds	
3	hnute burg  āc	hnyte byrg  æc	nut borough or fortress oak	nouns that refer to sturdy entities that usually grow together in groups	

Table 4 shows one possible way to interpret the marked distinctive semantic feature SI for the nominal IVA system. SI however is not an idiosyncratic marker of the nominal IVA system, but, as previously mentioned, is also the distinctive, marked, semantic feature of “mass nouns” (cf. Tobin 1994 [1995]). But, although these different Plural declension systems of nouns are covered by the same distinctive semantic feature of *Semantic Integrality*, they differ in their form. The historical mass nouns, such as ‘water’, ‘antelope’, ‘money’, may be mono-, bi-, or poly-syllabic



while the IVA nouns are exclusively monosyllabic. This kind of morphological distinction may be explained by the communication and human factors, discussed in Even-Simkin & Tobin (2009a, 2010b). The monosyllabic structure of the IVA nouns makes the internal vowel of the IVA nouns more salient and easier to perceive, whereas the semantic motivation for SI is less obvious than for the bi- or polysyllabic mass nouns. This very well balanced complementary distribution of the form (*signifiant*) and meaning (*signifié*) supports our claim that IVA NOUN PLURALS are non-arbitrary and represent a morpho-phonologically and semantically motivated system.

In Table 4, we point out that the nominal IVA class, which is semantically marked for *Semantic Integrality* may be further divided into three possible semantic sub-groups. The first group of the nouns entails two/manifold sets or units which may: (a) be either viewed as paired e.g. *hōnd* (hand – as a rule a pair), *brōc* (breeches, trousers, pants – clothes intended for the paired parts of the body), *bōc* (book – consists of more than one page bounded together), *tooth* (each tooth has an upper and lower pair), *foot* (as a rule a pair), or (b) as being complementary polar pairs, such as: *fēōnd* (foe) vs. *frēōnd* (friend); *man* vs. *woman*. All of these IVA nouns reflect the marked feature of *Semantic Integrality*, which implies “a set of individual entities perceived together in the same continuous space as a single unit ( $a + b = ab$ )” (Tobin 1993b: 147), as far as they entail the units, which may be either paired and complementary or identical. The second group of the IVA nouns includes the nouns, such as: *goose*, *cū* (cow), *mouse*, which also have their own distinctive common semantic domain that implies communal living near human beings of certain animals, which exist jointly in herds or in groups, thus also making a claim for SI, by reflecting the integral existence of entities in space, semantically. The last group includes the following nouns: *hnute* (‘nut’), *āc* (‘oak’), *burg* (‘borough’ or ‘fortress’) that share the following common semantic domain: refer to sturdy units that typically grow together or exist in clusters or groups. The semantics of these nouns entails the integral spatio-temporal-existential character of certain units, thus, also reflecting the marked feature of these nouns for *Semantic Integrality*, in a similar way as in the other sub-groups of this Table (4). We are not claiming that these are the only possible classifications of the realization of the CSD-SI for the IVA nominal system but these sub-systems can serve as an example of one such classification.

## 6. The phonological systematization of IVA in verbal PAST TENSE forms

More verbal ablaut IVA forms than nominal IVA ones have been retained from Old English and are found in Modern English. Beedham (2005: 112) points out that “[i]rregular verbs are a historical vestige, but so are the regular verbs (so is

everything in language), that does not stop the irregular verbs from being rule-governed and meaningful synchronically, if we can only find the rule(s) and the meaning(s).” Moreover, the processing mechanisms for both the regular and the so-called irregular verbs seems to be the same or quoting Bybee (2001:110): “the model developed in Bybee (1985, 1988, 1995), along with the connectionist models (Rumelhart and McClelland 1986) and the analogical model (Skousen 1989, 1992), would claim that both regulars and irregulars are handled by the same storage and processing mechanisms”. It is worth noting that the idea of a significant semantic character for the “irregular” verbs was examined in neuro-psychological and neuro-imaging studies by e.g. Patterson, Lambon Ralph, Hodges, & McClelland (2001) & Tyler, Randal & Marslen-Wilson (2002), where the authors report about selective problems in the conjugation process of “irregular” Past Tense verbs in patients with semantic dementia. As, for example, Patterson et al. (2001:721) note, a “deficit restricted to irregular past-tense forms in patients with degraded semantic knowledge was [already][E.E-S & Y.T] predicted by Joanisse and Seidenberg [(1999)]”. Furthermore, the experimental evidence reported in studies by Bybee and Slobin (1982), Bybee (1985) suggests that “irregular verbs can be semantic attractors” (Baayen & Moscoso del Prado Martín 2005:670). For example, one of such experimental studies reports that the verb “*seat* was often responded to with the past tense form *sat* instead of *seated*, and *search* similarly sometimes elicited *sought* as past tense instead of *searched*” (Baayen & Moscoso del Prado Martín 2005:669; Bybee & Slobin 1982). Our study has shown that the IVA verb forms which are consistently represented with the different degrees of backing process in opposition to the fronting process (in nominal IVA forms) is semantically iconic, (moving back in time to the past) where each IVA verb pattern may be also motivated and classified semantically both in Old and Modern English.

In Tables 1 and 2, we observed the varying degrees of the *fronting* process of IVA nominal forms. Table (5) shows the corresponding varying degrees of the *backing* process found in the IVA verbs: e.g. ‘*slink, wring, swing, sting, strike, sling, cling, fling, win, hang*’ → ‘*slunk, wrung, swung, stung, struck, slung, flung, won, hung*’, which represent the same phonological backing pattern and thus may be classified as a subgroup with its distinctive IVA form, such as: from high front lax [ɪ] or low front [æ] or the low-central high-front diphthong [aɪ] → to mid-central [ʌ]. A similar backing process is also evident in other IVA verbal Past Tense formations, i.e. different types of IVA represent a various degrees of backing process, like in ‘*see, fight*’ → ‘*saw, fought*’, where high front diphthong [iɪ] or low-central high-front diphthong [aɪ] → to low back [ɔ:]; like in ‘*find*’ → ‘*found*’, from low-central high-front diphthong [aɪ] → to low-central high-back diphthong [aʊ]; like in ‘*drink, sink*’ → ‘*drank, sunk/sank*’, from high lax front [ɪ] → to low front [æ] or mid-central [ʌ]; like in ‘*eat*’ → ‘*ate*’, from high-front diphthong [iɪ] → to mid-front [ɛ]; like in ‘*draw, grow, fly*’ → ‘*drew, grew, flew*’, from low back [ɔ:] or

mid-central high-back diphthong [əʊ] or low-central high-front diphthong [aɪ] → to high-back diphthong [uɪ]; like in ‘take, stand’ → ‘took, stood’, mid-front high-front diphthong [eɪ] or low-front [æ] → to high-back diphthong [ʊu]; like in ‘drive’ → ‘drove’ from low-central high-front diphthong [aɪ] → to mid-central high-back diphthong [əʊ]; like in ‘swear’ → ‘swore’, from mid-front mid-central diphthong [eə] → to low-back mid-central diphthong [ɔə]; like in ‘speak’ → ‘spoke’, from high-front diphthong [ɪi] → to mid-central high-back diphthong [əʊ]; like in ‘awake’ → ‘awoke’, from mid-front high-front diphthong [eɪ] → to mid-central high-back diphthong [əʊ]; and like in ‘shoot’ → ‘shot’, from high-back diphthong [ʊu] → to low-back [ɔ] or [ɒ].

Table 5. Backing Process of IVA in PAST TENSE conjugation of the originally ‘Strong’ verbs in English

Group no.	Stem-vowel in non-past tense form in Old English(O.E.) or Modern English (Mod.E.)	Stem-vowel in past tense form in Old English or Modern English	No. of verbs per group	Backing process in Old English or Modern English (+)/(-)	The list of verbs
1	Mod.E.: [ɪ], [aɪ],[æ]	Mod.E.: [ʌ]	10	+	<i>slink, wring, swing, sting, strike, sling, cling, fling, win, hang</i>
2	Mod.E.: [ɪ],[aɪ], [ɛ]	Mod.E.: [ɔ:] [ɔ]/[ɒ] <sup>3</sup>	4	+	<i>fight, see, get, tread</i>
3	Mod.E.: [aɪ]	Mod.E.: [aʊ]	4	+	<i>find, grind, bind, wind</i>

(Continued)

2. It is worth pointing out the dialectal variation of the IVAs of the verbs: *tread* and *get* in the vowel transcription in British and American English. For this reason, there is some variation in the transcription of vowels (cf. Ladefoged 1993:70). In the chart of English vowels, e.g. Ladefoged compares and gives the IPA symbols that are used by different authors. For example, [ɒ] used by J.C. Wells (1990) in the *Longman Pronunciation Dictionary* in the transcription of the internal vowel sound of the word “bother” corresponds to the [ɔ] used by Jones (1977) in the *Everyman’s English Pronunciation Dictionary* (14th ed.). Also, [ɔ:] used by Jones (1977) in this dictionary in transcribing the internal vowel sound of the verb “brought”, which differs from the transcription of the sound: [ɔ], is given in other dictionaries, such as, Kenyon & Knott (1953), Prator & Robinett (1985). Moreover, the *New Collins Concise Dictionary of the English Language* (1982:xix), by McLeod and Hanks, also has the following remark concerning the merging of both sounds [ɔ:] and [ɒ], that is, “[t]he old-fashioned /ɔ:/ in words like *off, cloth, cross* is abandoned in favour of /ɒ/”.

Table 5. (Continued)

Group no.	Stem-vowel in non-past tense form in Old English(O.E.) or Modern English (Mod.E.)	Stem-vowel in past tense form in Old English or Modern English	No. of verbs per group	Backing process in Old English or Modern English (+)/(-)	The list of verbs
4	Mod.E.: [I]	Mod.E.: [æ]	4	+	<i>drink, begin, sit, swim</i>
	O.E.: /i/	O.E.: /o/ or /u/	1	-	<i>run</i>
	Mod.E.: [ʌ]	Mod.E.: [æ]			
4 or 1	Mod.E.: [I]	Mod.E.: [æ] or [ʌ]	6	+	<i>sink, spin, stink, sing, shrink, spring</i>
5	Mod.E.: [Ii]	Mod.E.: [ɛ]	1	+	<i>eat</i>
	O.E.: /ea/	O.E.: /ēo/	1	+	<i>fall</i>
	Mod.E.: [ɔ:]	Mod.E.: [ɛ]		-	
	O.E.: /ea/	O.E.: /ēo/	1	+	<i>hold</i>
	Mod. E.: [əʊ]	Mod.E.: [ɛ]		-	
6	Mod.E.: [ɔ:], [əʊ], [aI]	Mod.E.: [ou]	6	+	<i>draw, grow, know, blow, throw, fly</i>
7	Mod.E.: [eI], [æ]	Mod.E.: [ou]	5	+	<i>take, shake, stand, forsake, slay</i>
8	Mod.E.: [aI]	Mod.E.: [əʊ]	8	+	<i>(a)bide, rise, shine, drive, strive, dive, stride</i>
9	Mod.E.: [eə]	Mod.E.: [ɔə]	4	+	<i>swear, tear, shear, bear</i>
10	Mod.E.: [Ii]	Mod.E.: [əʊ]	6	+	<i>speak, weave, steal, heave, freeze, yield</i>
11	Mod.E.: [eI]	Mod.E.: [əʊ]	3	+	<i>awake, break, wake</i>
12	O.E.: /ī/	O.E.: /ā/ or /i/	2	+	<i>bite, slide</i>
	Mod.E.: [aI]	Mod.E.: [I]		-	
12 or 8	O.E.: /ī/	O.E.: /ā/ or /i/	3	+	<i>ride, write, smite</i>
	Mod.E.: [aI]	Mod.E.: [əʊ] (or [I] in some dialects)		+/(-)	
13	O.E.: /ēo/	O.E.: /ēa/ or /u/	2	+	<i>choose, shoot</i>
	Mod.E.: [ou]	Mod.E.: ([vɔ]/[əʊ])		+	
14	Mod.E.: [I]	Mod.E.: [eI]	3	+	<i>bid, give, cleave</i>
	O.E.: /e/	O.E.: /ō/	1	+	<i>come</i>
	Mod.E.: [ʌ]	Mod.E.: [eI]		-	
	O.E.: /i/	O.E.: /æ/ or /æ̃/(/ā/)	1	+	<i>lie</i>
	Mod.E.: [aI]	Mod.E.: [eI]		-	

Table 5 presented the fourteen groups of seventy-six Modern English IVA verbs arranged according to the specific form of the phonological IVA class, which follow the backing process either in their Modern or Old English form. However there is a small number of Modern English IVA verbs which have not preserved their original Old English backing process. Figure 1, below, indicates the percentage rate of the IVA forms with the +backing feature in Modern English as opposed to the isolated instances of Modern English IVA forms that have not retained this iconic backing process.

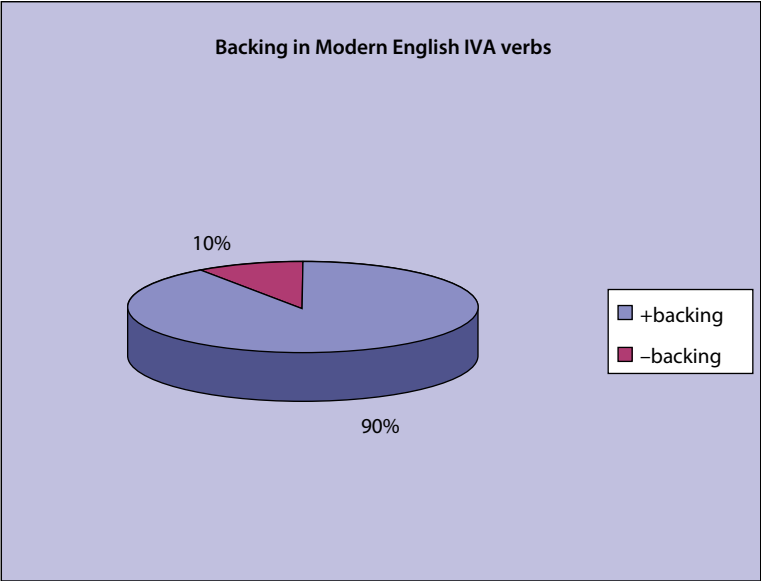


Figure 1. Backing in Modern English IVA forms

The vast majority, that is about ninety percent of the Modern English IVA verbs display various relative degrees of +backing, however, there are isolated cases which do not retain the backing process. Table 5 depicts these Modern English IVA verbs that did not preserve +backing, thus resulting in -backing in Modern English: e.g. ‘run, fall, bite, slide, come, lie, hold’. However it is worth noting the fact that in their Old English forms they all followed the +backing process as indicated in Table (5) where we also observe the Old English +backing process for these verbs.

The Modern English IVA verbs were divided into fourteen classes according to their specific kind of IVA form in the Past Tense. However, historically, the Old English *ablaut* or “strong” verbs were divided into Seven Classes in the conjugation of Past Tense, where each class signified an *ablaut* system, which comes from the Teutonic language (Emerson 1910; Quirk & Wrenn 1955; Hulbert 1963;

Mitchell & Robinson 1982). The next Table (6) shows these *ablaut* (*vowel-gradation*) forms of seven classes of Old English IVA verbs, where VV represents a phonemic long vowel, i.e. (Vowel + Vowel). However, there was not only a phonemic distinction based on vowel length in Old English, but there was also a further opposition between singular and plural forms in the Past Tense form of the Old English “strong” verbs. Nevertheless, it is important to point out that in all of these classes of “strong” verbs, the vowel gradation distinguished the Non-Past and the Past Tense forms. Thus, there were various degrees of the *backing process* (following the phonological system of Old English discussed by e.g. Quirk & Wrenn’s (1955), Lass & Anderson’s (2010[1975])) in the singular and/or the plural Past Tense forms. In Table 6 we observe that the vowel variation of the first class, for instance, goes from a long high-front /i/ to a low-central-back /a/ in a singular form and a high-front /i/ in the plural. As Emerson (1910: 346) notes, “[o]f the two preterit stems in Old English sometimes one, sometimes the other has been retained in the modern speech, but more commonly the singular has outlasted the plural”. In the second class we observe the internal vowel variation from the mid-front back diphthong /eo/ to the low-front central-back diphthong /æa/ in singular or high-back /u/ in plural. The additional variations of vowel gradation that demonstrate various relative degrees of *backing*: from high-front /i/ or mid-front /e/ or the mid-front back diphthong /eo/ to low-central-back /a/ or the mid-front low-central-back diphthong /ea/ in singular and high-back /u/ in plural, we further point out in the third class. In the next two classes IV and V, we observe a different degree of *backing* from mid-front /e/ to a low-front /æ/ in singular and a long low front /ææ/ in plural. In the sixth class, there is a low-central-back /a/ to a long-back /oo/ in singular and plural; and in the last class of the *reduplicating verbs* there is IVA from a mid-front low-central-back diphthong /ea/ to mid-front back diphthong /eo/ in singular and plural. These seven different classes of the Old English IVA verbs are summarized, following the Emerson (1910), Quirk & Wrenn (1955), Lass & Anderson (2010[1975]) studies, in Table 6.

Table 6. The “Strong” seven classes of Old English verbs

Class	Non-Past	(Pret1/Pret2) = Past		Backing (+)
I	ii	aa	i	+
II	eo	æa	u	+
III	1. i	a	u	+
	2. e	ea	u	+
	3. eo	ea	u	+
IV	e	æ	ææ	+
V	e (i, ie)	æ	ææ	+
VI	a	oo	oo	+
VII	ea	eo	eo	+

Table (7) presents the prevailing phonological backing process of the Old English IVA verb forms, which is particularly apparent in the conjugation from Present second and third person singular to Past Tense singular and/or plural forms of the six “strong” classes. This kind of regularity in phonological process is not surprising. As Quirk & Wrenn (1955:46) claim these six Classes have arisen by gradation, whereas the changes of a vowel in Class VII are of obscure origin.

Table 7. The IVA systems for seven classes of the Old English “Strong” verbs

Class no.	Stem vowel in infinitival and non-past tense forms	Stem vowel in 2sg. & 3sg. present tense forms	Stem vowel in past tense form	Examples of O.E. forms of the class
I	/ī/	/ȳ/, /ī/	/ā/ – sg. /i/ –pl.	rīsan
II	/ēo/, /ū/	/ȳ/, /ī/	/ēa/-sg. /u/-pl.	flēon
III	1. /i/ 2. /eo/, /ie/	/i/	1. /a/-sg.; /u/-pl. 2. /ea/-sg.; (/i/ or /u/-pl.)	climban feohtan
IV	1. /e/ 2. /e/ (/ie/)	/i/, /ȳ/	1. /ō/-sg/pl.; /æ/s-; /æ/-pl. 2. /ea/-sg.; /ēa/-pl.	beran scieran
V	1. /ēo/ or /ie/ 2. /i/ or /e/	/i/, /ȳ/, /ī/	1. /ea/-sg.; /ā/ or /ēa/-pl. 2. /æ/-sg.; /æ/-pl.	sēon sittan
VI	/a/, /e/, /ea/, /æ/	/e/, /ȳ/	/ō/-sg./pl.	scacan
VII	/ō/, /ā/ or /æ/, /ea/	/ȳ/, /æ/, /ē/, /e/	(/ēo/ or /ē/-sg./pl.)	cnāwan feallan

The data in Table 7 support our claim concerning the non-random phonological nature of IVA Past Tense forms as an iconic system both in Old and Modern English, where the Past Tense formation reflects ‘moving backward in time’. In the next section (7) we will show how this iconic phonological system is also semantically motivated.

7. The semantically marked features of IVA verbal PAST TENSE forms

In the diachronic analysis of the IVA Past Tense formations there are two fundamental questions which we propose to answer: (1) Were the verbal IVA forms semantically motivated? and (2) Do the verbal IVA forms share a Common Semantic Denominator (CSD) and *signifiés* in a systematic way? As previously mentioned, the verbal Past Tense IVA forms are systematic phono-morphologically

and iconically. First, the verbal IVA forms – like the nominal IVA forms – are predominantly monosyllabic, (i.e. a monosyllabic verb or an unaccented verbal prefix + a stressed monosyllabic verb stem) which makes the IVA in word medial position easier to perceive (cf. Even-Simkin & Tobin 2010b). Secondly, in both syntactic classes the nominal and verbal IVA systems exploit opposite and even polaric processes: the fronting in the nominal IVA plurals and backing in the Past Tense IVA constructions both of which can serve as the *signifiant* in a full-fledged sign system. We have already established a CSD-*signifié* in the form of the distinctive semantic feature SI for the IVA nominal system. We will now postulate that the phonological backing process in the verbal IVA forms (*signifiant*) may be intrinsically paired to a CSD realized as marked distinctive semantic feature RESULT (*signifié*), (originally explored in Tobin 1993a: 11):

...[o]ne of the most frequently discussed semantic or grammatical distinctions which is relevant to our notion of the marked distinctive semantic feature 'Result' is the opposition of *telic* versus *atelic*....

This categorization of *telic/atelic* (in all of its manifestations) as well as various temporal-oriented phenomena have inspired much work on the typology of different kinds of verbs and verb forms. These categorizations include: the typological categorization of verbs into 'stages', 'processes' and 'events', the semantic distinctions between 'static', 'activity', and 'performance', the verbal categories of 'achievements' and 'accomplishments', 'speech acts' of various kinds and grammatical and semantic features such as 'stative', 'durative', 'telic', 'voluntary', etc., all of which have been the source of much controversy in a large mass of literature.

...

[However][E.E-S & Y.T]..., the notion of *telic* (in all of its manifestations) is inherent to the marked semantic feature Result. The marked semantic feature Result will include all these possible interpretations if and only if the encoder wants to make a result-oriented claim of any kind .... At all other times ... an action, state, or event may either be viewed as a 'process' and/or 'result' ... the unmarked or neutral member of the pair will be chosen.

We will now claim that the particular marked distinctive semantic feature of the so-called IVA irregular verbs is RESULT and thus *resultativeness* (like SI for the nominal IVA system) is the *signifié* of the IVA verbal sign system.

One should further note that the distinctive semantic feature of Result of the IVA verbs may also be compared to the distinctive semantic feature of Semantic Integrity of the IVA nouns. The distinctive semantic feature of Result by definition entails the integral perception of viewing: (a) the action or process aspect of a verb together with (b) its subsequent or consequential result as part of a single or discontinuous perception:  $a + b = ab$ .



Table 8, below, summarizes the Old English IVA forms of the historical seven “strong” *ablaut* classes, which share the CSD of the marked distinctive semantic feature for RESULT.

**Table 8.** CSD(+ Result) of seven classes of “Strong” verbs in Old English

Class no. with the examples	Stem vowel in non-past tense form	Stem vowel in past tense form	CSD: +Result
I rīsan (rise)	[ī]	[ā]-sg./ [i] <sup>4</sup> -pl.	+
II flēon (flee)	[ēo]/[ū]	[ēa]-sg./ [u]-pl.	+
III climban (climb) feohtan (fight)	1. [i] 2. [eo]/[ie]	1. [a]- sg./[u]-pl. 2. [ea]-sg./([i]/[u]-pl.)	+
IV beran (bear) scieran (shear)	1. [e] 2. [e] ([ie])	1. [ō] sg./pl.; [æ]-sg./ [æ]-pl. 2. [ea]-sg./[ēa]-pl.	+
V sēon (see) sittan(sit)	1. [ēo]/[ie] 2. [i]/[e]	1. [ea]-sg./([ā]/ [ēa]-pl.) 2. [æ]-sg./[æ]-pl.	+
VI scacan (shake)	[a]/[e]/ [ea]/[æ]	[ō]-sg./pl.	+
VII cnāwan (know) feallan (fall)	[ō], [ā]/ [æ], [ea]	[ēo]/[ē]-sg./pl.	+

This feature of *Result* is realized in such diverse notions as: achievements, goals, purposes, telic end-points and subsequent or consequential physical or metaphorical changes of states and changes of position (Tobin 1993a). Indeed, all of these different kinds of resultative messages appear in the CSDs of all the seven classes

3. Following Emerson (1910) as well as other studies in the history of English, the singular Past Tense form of the verb has outlasted the plural one. This may be explained in the following way: while the singular Past Tense form had only the IVA, the plural Past Tense had a more complicated structure – an additional suffix (on) beside the *ablaut* form – what is less efficient in terms of the human factor.

of Old English IVA verbs to be presented in Table 9. If one examines the semantic aspects of the originally “strong” forms of the Modern English IVA verbs found in such historical studies as Skeat (1879), Wright (1908), Emerson (1910), Quirk & Wrenn (1955), Hulbert (1963), Jember (1975), Pollington (2004) in general, and in the specific dictionary entries in the Oxford English Dictionary (OED) and Partridge’s (2006) *Origins: A SHORT Etymological Dictionary of Modern English* in particular, one can postulate CSDs for each of seven classes of the IVA “strong” conjugation verb system in Old English that point to the RESULTATIVE character of these seven semantic classes:

- I. *a motion that involves either physical or metaphorical change forward for a specific purpose*;
- II. *a reaction/action that causes a fixed and/or new kind of form or position*;
- III. *a complex movement: gradual or strong in order to obtain a goal or reach an end-point*;
- IV. *an interruption of a continuous action or state to obtain a result*;
- V. *a process that implies obtaining or providing of certain form, substance, information or position literally or metaphorically*;
- VI. *an action that results in a particular position or change of state*;
- VII. *a process that results in adhering of some elements or in a mental/physical growth and/or abandoning of the previous state*.

The specific aspects of resultativeness (as defined in Tobin 1993a and Gorlach 2000, 2004) are highlighted in the CSDs of the seven classes of the Old English “strong” IVA verbs presented above. These resultative CSDs of the seven classes of Old English IVA “strong” verbs are presented schematically in Table (9).

**Table 9.** CSDs of seven classes of “Strong” verbs in Old English

Class no. with the examples	Stem vowel in non-past tense form	Stem vowel in past tense form	CSD
I rīsan (rise)	[ī]	[ā]-sg./ [i]-pl.	A motion that involves either physical or metaphorical change forward for a specific purpose
II flēon (flee)	[ēo]/[ū]	[ēa]-sg./ [u]-pl.	A reaction/action that causes a fixed and/or new kind of form or position

(Continued)

Table 9. CSDs of seven classes of “Strong” verbs in Old English (Continued)

Class no. with the examples	Stem vowel in non-past tense form	Stem vowel in past tense form	CSD
III climban (climb) feohtan (fight)	1. [i] 2. [eo]/[ie]	1. [a]- sg./[u]-pl. 2. [ea]-sg./([i]/[u]-pl.)	A complex movement: gradual or strong in order to obtain a goal or reach an end-point
IV beran (bear) scieran (shear)	1. [e] 2. [e] ([ie])	1. [ō] sg./pl.; [æ]-sg./ [æ]-pl. 2. [ea]-sg./[ēa]-pl.	An interruption of a continuous action or state to obtain a result
V sēon (see) SITTAN(sit)	1. [ēo]/[ie] 2. [i]/[e]	1). [ea]-sg./([ā]/ [ēa]-pl.) 2). [æ]-sg./[æ]-pl.	A process that implies obtaining or providing of certain form, substance, information or position literally or metaphorically
VI scacan (shake)	[a]/[e] /[ea]/[æ]	[ō]-sg./pl.	An action that results in a particular position or change of state
VII cnāwan (know) feallan (fall)	[ō], [ā]/ [æ], [ea]	[ēo]/[ē]-sg./pl.	A process that results in adhering of some elements or in a mental/physical growth and/or abandoning of the previous state

Table 9 indicates that each IVA of the Old English “strong” verbal forms, which have been retained in Modern English (*signifiant*), may be paired with its corresponding (*signifié*) CSD-RESULT. If we examine the CSDs of the seven Old English *gradation* classes of the “strong” verbs, we observe that all of them share the resultative messages either literally or figuratively. Following Gorlach (2004: 52):

... the opposition Process/Result has been analyzed in English mostly in semantic terms, which, in turn, resulted in a diversity of meanings ... attached to this notion. The authors discussing the category of resultativeness have used different terms reflecting the different meanings they have assigned to it: ‘result’, ‘completion’, ‘completeness’, ‘effect’, ‘consequence’, ‘resultative’, ‘resultant condition’, ‘result phase’, ‘result-orientation’, ‘outcome’, ‘endpoint’, ‘destination’, ‘telic goal’, etc.

All of these different messages outlined above, associated with the category of resultativeness, realize different aspects of the *signifié* – RESULT, which is posulated for the IVA verb sign system of Old English and depicted in Table 9. We should further note that the number of verbs in the IVA verb sign system greatly

outnumbers the number of nouns in the IVA nominal sign system. Indeed, this more highly complex character of the verbal IVA system as well as the broader semantic and pragmatic scope of CSD-RESULT may appear to be less transparent and precise when compared and contrasted to the simpler nominal IVA sign system with the CSD-SI.

However there are two common denominators that link the IVA nominal and verbal systems semantically. First, just as the IVA nouns (marked for the distinctive semantic feature SI) are opposed in meaning to the so-called regular ('N + s') system, (unmarked or neutral for SI), the IVA "strong" verbs (marked for the distinctive semantic feature Result) are opposed in meaning to the so-called regular ('V + ed') system (unmarked or neutral for Result and may signify both process versus resultative messages). Secondly, the distinctive semantic feature Result postulated for the IVA verbs may also be compared to the distinctive semantic feature postulated for the IVA nouns: Semantic Integrality. The distinctive semantic feature of Result entails viewing: (a) the action or process aspect of a verb together with (b) its subsequent or consequential result as part of a single or discontinuous perception:  $a + b = ab$ .

It should also be noted that while oversimplifying the seven ablaut classes of the "strong" Old English verbs, i.e. the specific sub-classes of the CSD-Result, we may even further observe that some of the gradation classes overlap both semantically and phonologically. For example, the CSD of class IV: **"an interruption of a continuous action or state to obtain a result"** is semantically related to the CSD of class VI: **"an action that results in a particular position or change of state"**. It is not surprising that this semantic overlap may also be explained by their IVA matching phonology: i.e. only these specific classes have the similar phonological IVA pattern – [o]/[oo]. This particular significant semantic-phonological correspondence (as well as a similar matching among the other classes) should not be viewed as an accidental matching, as far as, it is "natural condition of a language is to preserve one form for one meaning, and one meaning for one form" (Bolinger 1977:x).

The following important aspects: (a) a larger quantity of IVA verbs in Old English and (b) a larger phonological diversity of ablaut in each class justifies and explains a more general and oversimplified character of the seven CSDs. In each class we have more than one phonological IVA sub-system, thus, each class has a less exhaustive CSD. Thus, the diversity and complexity concerning the IVA phonology of these seven classes may explain the more complex character of CSDs postulated for each class (Even-Simkin & Tobin 2011), therefore emphasizing the semiotic view of the IVA as a classification system where the invariant meaning is linked to its individual signal or form, since "in language, as in other communication systems, the sign is composed of a distinct signal to which a single unitary meaning is invariably paired" (Tobin 1990:79).

Comparing Old and Modern English foregrounds the multiple differences between them, which were discussed earlier. For example the former had fewer ablaut classes, whereas each class had more IVA forms. But, from the Old English to Modern English period, the English language endured multiple changes. The most frequent and well-known transition was a large number of “strong” IVA verbs that moved over to the “weak” ‘V + -ed’ system. However, there were also several “weak” verbs that took on the conjugation of “strong” verbs. As a result of these changes, Modern English has a smaller number of ablaut verbs but a larger variation in ablaut forms, thus, making it possible to establish more groups, where each group presents only one kind of phonological IVA form. However despite the wider variation of IVA verb forms in Modern English, we maintain that the same CSD with the invariant meaning – RESULT may still be found in Modern English as in Old English. It points to the historical phonologically-semantic consistency of the IVA verb process over time. In Table 10 we observe that the Modern English IVA forms not only share the phonological backing process (*signifiant*) of the Old English IVA classes, but also share the same *signifié*: the distinctive semantic feature of RESULT.

Table 10. CSD-RESULT of the Modern English IVA verbs

Group no.	List of verbs	No. of verbs	IVA →		CSD: +Result
			Stem vowel in non-past tense form	Stem vowel in past tense form	
1	S: slink, wring, swing, sting, strike, sling, cling, win S/W: hang, fling	10	[I], [aI],[æ]	[Λ]	+
2	S: fight, see get, tread	4	[Ii],[aI], [ε]	[ɔ:] [ɔ]/ [ɒ]	+
3	S: find, grind, bind, wind	4	[aI]	[aʊ]	+
4	S: drink, swim, begin, sit run	4 1	[I] [Λ](O.E.: [i])	[æ]	+

(Continued)

Table 10. (Continued)

Group no.	List of verbs	No. of verbs	IVA →		CSD: +Result
			Stem vowel in non-past tense form	Stem vowel in past tense form	
1/4	S: sink, spin, stink, shrink, sing, spring	6	[I]	[ʌ] and/or [æ]	+
5	S: eat, fall	3	[Ii], [ɔ:] (O.E.: [ea])	[ɛ] [ɛ] (O.E.: [ēo])	+
	hold		[əʊ] (O.E.: [ea])	[ɛ] (O.E.: [ēo])	
6	S: draw, grow, know, blow, throw, fly	6	[ɔ:], [əʊ], [aI]	[ʊu]	+
7	S: take, shake, slay, stand, forsake	5	[eI], [æ]	[ʊu]	+
8	S: (a)bide, rise, shine, drive, strive, dive, stride	8	[aI]	[əʊ]	+
9	S: swear, tear, shear, bear	4	[eə]	[ɔə]	+
10	S: speak, weave, steal, heave, freeze, yield	6	[Ii]	[əʊ]	+
11	S: awake, break, wake	3	[eI]	[əʊ]	+
12	S: bite, slide	2	[aI] (O.E.: [i])	[I] (O.E.: [ā]/[i])	+
12/8	S: ride, write, smite	3	[aI] (O.E.: [i])	[I] (O.E.: [ā]/[i]) and/or [əʊ]	+
13	S: choose, shoot	2	[ʊu]	[ɔʊ] / [əʊ]	+

(Continued)

Table 10. CSD-RESULT of the Modern English IVA verbs (Continued)

Group no.	List of verbs	No. of verbs	IVA →		CSD: +Result
			Stem vowel in non-past tense form	Stem vowel in past tense form	
14	S: <i>bid</i> , <i>give</i> , <i>cleave</i>	3	[I]	[eI]	+
	<i>come</i>	1	[ʌ] (O.E.: [e])	[eI] O.E.: [ō]	
	<i>lie</i>	1	[aI] (O.E.: [i])	[eI] O.E.: [æ]/[ǣ]/[ā]	

Table (11) presents these fourteen groups of Modern English IVA verbs as a full-fledged sign system, where each group has the *signifiant* of the backing process and the *signifié* of CSD-RESULT, where “the defining features of the class are not based [primarily][E.E-S & Y.T] on the present form,..., but rather on the past” (Bybee 1995: 430; Bybee & Moder 1983). All of the message types with the CSD of the IVA are marked for Result, although, the diverse notions associated with the marked distinctive semantic feature Result may be less obvious or transparent than in their Old English counterparts.

Following Tobin’s (1993a: 15) definition of the opposite notions of the *process* versus *result*:

... language may reflect two fundamental ways of viewing actions, states, or events; either as focusing on the (ongoing) *process* involved in the action, state, or event, or, alternatively, from the point of view of the *result* (outcome, endpoint, consequence, completion, destination, or telic or teleological goal).

we observe that the marked distinctive semantic feature Result is a further example of Semantic Integrality because it entails viewing both the process and the resultative aspects of the verb as a single entity perceived in continuous space, time and existence. Therefore the contextual discourse messages that we assign to CSD-RESULT in this study follow the integral perception of actions, states, or events as approaching and being resolved by actual results. All of the contextually based messages of the Modern English IVA verbs imply an action that either results in a change of state or position, an accomplishment of some event or a consequence, destination and/or completion.

In Table 11 we present the CSDs of the various sub-classes of the Modern English IVA verbs in italics and their resultative message types are underlined. Thus, all of the “strong” IVA verbs in Old and Modern English are marked for the

distinctive semantic feature RESULT in opposition to the non-IVA “weak” verbs (“V + -ed”) which are unmarked or neutral for the feature RESULT and thus may either express process or resultative kinds of messages. The resultative messages and the CSD-RESULT of the Modern English IVA verbs appear in Table 11.

Table 11. CSDs resultative messages of the Modern English IVA verbs

Group no.	List of verbs	No. of verbs	IVA →		CSD composed from the definitions given in OED <sup>5</sup>
			Stem vowel in non-past tense form	Stem vowel in past tense form	
1	S: slink, wring, swing, sting, strike, sling, cling, win S/W: hang, fling	10	[I], [aI], [æ]	[ʌ]	<i>to thrust, to cast, to twist, to stick, to move or press with some force or speed</i>  <u>an action or process that causes a resultative change in position or state</u>
2	S: fight, see get, tread	4	[Ii], [aI], [ε]	[ɔ:] [ɔ]/ [ɒ]	<i>to perceive/ to get possession/ 'get on top' of something</i>  <u>an action or process resulting or achieving or obtaining a goal</u>
3	S: find, grind, bind, wind	4	[aI]	[au]	In this group the verbs: “bind, grind, wind” have the common semantic denominator <i>some turning movement round something or to and fro against</i> . The verb “find”, the root of which goes back to one belonging to the Teutonic root with the meaning “to seek, aim at” or “look for”, also fits into this group metaphorically and/or phonologically  <u>an action or process resulting in a change of position or state to seek-aim-at look for a certain goal or purpose</u>

(Continued)

4. It should be noted that all the semantic definitions of IVA verbal forms were collected from the *Oxford English Dictionary (OED)* and the CSD of the messages of each group is consequently the semantic meaning that is shared by all of the IVA forms, which are characterized by one kind of phonological IVA pattern.



Table 11. CSDs resultative messages of the Modern English IVA verbs (Continued)

Group no.	List of verbs	No. of verbs	IVA →		CSD composed from the definitions given in OED <sup>5</sup>
			Stem vowel in non-past tense form	Stem vowel in past tense form	
4	S: drink, swim, begin, sit run	4	[I]	[æ]	<i>fill/cover something with some substance or entering upon or going into a physical descent or a forward movement that may be implemented by muscles or some sort of physical force or exertion</i>
		1	[ʌ](O.E.: [i])		<u>an action or process leading to a resultative change of position or state and/or an activity one learns to achieve</u>
1/4	S: sink, spin, stink, shrink, sing, spring	6	[I]	[ʌ] and/or [æ]	<i>to give out/cover or fill something with some form or substance</i>
					<u>an action or process leading to a resultative change of position or state and/or an activity one learns to achieve</u>
5	S: eat, fall hold	3	[Ii],	[ɛ]	<i>a process that results in bringing to a particular physical or mental growth/development/ continuous motion /making progress/contact/ support/sensation/vision/ deprivation(of anything valued) or in remaining in a certain place/posture</i>
			[ɔ:] (O.E.: [ea])	[ɛ] (O.E.: [ēo])	
			[əʊ] (O.E.: [ea])	[ɛ] (O.E.: [ēo])	<u>an action or process leading to resultative changes of a state or position</u>
6	S: draw, grow, know, blow, throw, fly	6	[ɔ:], [əʊ], [aI]	[ʊu]	<i>to move something in a specified direction to create a forward or upward force</i>
					<u>an action or process leading to resultative changes of a state or position to seek-aim-at look for a certain goal or purpose</u>

(Continued)

Table 11. (Continued)

Group no.	List of verbs	No. of verbs	IVA →		CSD composed from the definitions given in OED <sup>5</sup>
			Stem vowel in non-past tense form	Stem vowel in past tense form	
7	S: take, shake, slay, stand, forsake	5	[eɪ], [æ]	[ʊu]	<i>an action that results in a particular position or change of state</i>  <u>an action or process leading to resultative changes of a state or position to seek-aim-at look for a certain goal or purpose</u>
8	S: (a)bide, rise, shine, drive, strive, dive, stride	8	[aɪ]	[əʊ]	<i>onward motion: to drive or force with some effort to move/ to draw/ to appear/to continue in existence</i>  <u>an action or process leading to resultative changes of a state or position to seek-aim-at look for a certain goal or purpose</u>
9	S: swear, tear, shear, bear	4	[eə]	[ɔə]	<i>a decision or a decisive action (like to take an oath, to rend, to extend away) that causes/ brings finally/potentially to another condition</i>  <u>an action or process leading to resultative changes of a state or position to seek-aim-at look for a certain goal or purpose</u>
10	S: speak, weave, steal, heave, freeze, yield	6	[ɪi]	[əʊ]	<i>to deliver/displace/convey/ form a (fixed/tied) mental/ physical product/item from the previous possessor/place/ unformed or untied substance</i>  <u>an action or process leading to resultative changes of a state or position to seek-aim-at look for a certain goal or purpose</u>
11	S: awake, break, wake	3	[eɪ]	[əʊ]	<i>breaking/stopping of some previous action or physical state</i>  <u>an action or process process leading to resultative changes of a state or position</u>

(Continued)

Table 11. CSDs resultative messages of the Modern English IVA verbs (Continued)

Group no.	List of verbs	No. of verbs	IVA →		CSD composed from the definitions given in OED <sup>5</sup>
			Stem vowel in non-past tense form	Stem vowel in past tense form	
12	S: bite, slide	2	[aI] (O.E.: [ī])	[I] (O.E.: [ā]/[i])	<i>the mechanism/action of moving down or moving forward</i>  <u>an action or process leading to resultative changes of a state or position to seek-aim-at look for a certain goal or purpose</u>
12/8	S: ride, write, smite	3	[aI] (O.E.: [ī])	[I] (O.E.: [ā]/[i]) and/or [əu]	<i>onward motion/ to drive or force with some effort to move/ to draw/ to appear/ to continue in existence or move forward</i>  <u>an action or process leading to resultative changes of a state or position to seek-aim-at look for a certain goal or purpose</u>
13	S: choose, shoot	2	[ou]	[ɔ/ɒ] / [əu]	<i>an action that entails some kind of endpoint</i>  <u>a telic action/process</u>
14	S: bid, give, cleave	3	[I]	[eI]	<i>to approach something by body or some matter to obtain some end-point or goal</i>
	come	1	[ʌ] (O.E.: [e])	[eI] O.E.: [ō]	<u>an action or process leading to resultative changes of a state or position to seek-aim-at look for a certain goal or purpose</u>
	lie	1	[aI] (O.E.: [i])	[eI] O.E.: [æ]/[ǣ]([ā])	

In Table 11, we observe that there are fourteen distinct phonological groups with fourteen distinctive or shared CSDs. These CSDs differ from the CSDs of the seven Old English classes, which combine more than one phonological IVA form per class. However the CSDs of both the Old English and the Modern English IVA verb systems share the same distinctive semantic feature RESULT. Following the above mentioned phonological diversity in terms of the level of the IVA specification in Old and Modern English, the more precise and definitive character of the CSDs postulated for the Modern English IVA forms could even be predicted, since each Modern English IVA group has a more exact phonological representation. Despite the phonological changes, over time, (e.g. the Great Vowel Shift) that took place in the English language, and the fact that the Past Tense IVA system endured major transformations, the IVA verbal Past Tense formations did not just

retain their phonologically iconic systematization: the *backing process* in Modern English, but they also preserved the semantic aspect of IVA, albeit with slightly different phonological patterns and semantic features.

It is also not surprising that, like in Old English, those groups that have the similar IVA patterns of their Past form are also close in their meanings. For example, the sixth and seventh groups presented in Table (11) share the same phonological IVA Past Tense form – [ʊu] and further display similar semantic denominators: “*to move something in a specified direction to create a forward or upward force*” (group 6) and “*an action that results in a particular position or change of state*” (group 7): i.e. an action or process leading to resultative changes of a state or position to seek-aim-at look for a certain goal or purpose, further supporting the semantically motivated character of the IVA in these two groups in particular, as well as in the rest of the groups in general. It is worth noting that as in Old English, the CSDs of the Modern English IVA groups tend to skew towards the resultative message types involving forward or downward motions or forces usually in order to obtain a result, goal, change of position or state, achievement or consequence etc.

## 8. Summary and conclusions

Following Beedham (2005: 168):

... the irregularity of the irregular verbs will disappear if we can find rules for them. If we find the meaning and the rules at all we will find them together, at the same time, because the linguistic sign is indivisible, i.e. form and meaning are indivisible.

This study provided an explanation for the essential aspects of the phenomenon known as “irregular” IVA nouns and verbs in Modern English. We have shown that there are systematic phonological and semantic patterns and features that both triggered and allowed for the Old English nominal and verbal IVA forms to be retained in Modern English. This was accomplished by viewing the IVA forms as systems composed of linguistic signs. We found that the phonological IVA patterns reflect fundamental CSDs, i.e. the *backing process* in the verbal forms (*signifiant*) is marked for the distinctive semantic feature *Result* (*signifié*) and the *fronting process* in the nominal forms (*signifiant*) is marked for the distinctive semantic feature of *SI* (*signifié*). The verbal IVA sign system is much more complex than the nominal IVA sign system which is why they are called *ablaut* or vowel GRADATION versus *umlaut i-MUTATION*, respectively. Following the sign-oriented approach, this study, consequently, connects the form-phonology and the meaning-semantics of the phenomenon of IVA as a full-fledged system of linguistic signs in English.

However there are two common denominators that further link the IVA nominal and verbal systems semantically:

1. Just as the IVA nouns (marked for the distinctive semantic feature of SI) are opposed in meaning to the so-called regular ('N + s') system (unmarked for SI), the IVA verbs (marked for the distinctive semantic feature of Result) are opposed in meaning to the "weak" verbs ('V + ed') (which are unmarked or neutral for Result and therefore may signify both resultative versus process messages).
2. The distinctive semantic feature of the IVA verbs: *Result* may also be connected to the distinctive semantic feature of the IVA nouns: *Semantic Integrality*. The distinctive semantic feature of Result by definition entails the integral perception of viewing the (a) action or process aspect of a verb together with (b) its subsequent or consequential result as part of a single or discontinuous perception:  $a + b = ab$ .

There are also the alternative non-IVA forms which also have been categorized as so-called irregular verbs in Modern English that were not discussed here. These other classes of verbs await further investigation following the same sign-oriented approach exemplified in this analysis that is based on the assumption that human actions convey meaning and function as signs. As Culler (1976: 91) puts it: "insofar as human actions or productions convey meaning, insofar as they function as signs, there must be an underlying system of conventions and distinctions which make this meaning possible". Therefore, further research should be able to uncover the various systems underlying these additional classes of so-called irregular forms and show that they are not arbitrary.

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# *Al hablar, se alterna hablando*

## Syntactic variation between two non-finite Spanish constructions

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This paper addresses the possible relationship between synchronic variation and diachronic change. It will be argued that the existence of contexts in which both alternating forms may occur without hindering the communicative inferences of the intended message should eventually favour the alternative that has some (communicative and/or formal) advantage over the other and cause a shift towards this form over time. The example that illustrates this hypothesis is the alternation between two Spanish non-finite constructions *al* + infinitive and *gerundio*. The purpose of this paper is to demonstrate that these so-called fuzzy contexts, necessary for linguistic change, actually exist.

### 1. Introduction<sup>1</sup>

In many cases of syntactic variation, the relevant contexts can be divided into three groups: group (i) where there is a clear preference for form (a) (if not used exclusively), group (ii) where there is a clear preference for form (b) (*ibid.*), and group (iii) where apparently there is free variation between forms (a) and (b).

It will be shown that the meanings of the types of context (i) vs. (ii) correlate with the meanings of the corresponding forms (a) and (b), and that the meanings of the latter may account for their distribution in the contexts of group (iii). The case in study is the alternation between the Spanish non finite adverbial *gerundio* constructions vs. *al*+ *infinitivo*, as in

- (1) *al llegar a casa, se encontró con el vecino*  
at-the arrive<sub>INF</sub> to house, himself he-met with the neighbour  
'When he came home, he ran into the neighbour'

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1. I am indebted to two anonymous readers of this volume for their comments on this article, and especially to Yishai Tobin for helpful comments and corrections in my English. All remaining flaws and errors are my own responsibility.

- (2) *llegando a casa, se encontró con el vecino*  
arriveGER to house, himself he-met with the neighbour  
'While coming home, he ran into the neighbour'

In this paper, the first results of this investigation will be given. As a preliminary study, a novel was taken and investigated on the use of the two forms under focus. The work that was chosen for this purpose is *Niebla*, an early twentieth-century novel in which both forms occur quite frequently (Unamuno 2000). In the story, the protagonist, Augusto, tells about his struggle to get acquainted with a woman, Eugenia, who in the end marries another man. Important elements in the novel are the inner monologues of Augusto with his dog, Orfeo, and the active role of the author, who in the end forces Augusto, his protagonist, to commit suicide by overeating.

In the analysis, both quantitative and qualitative data will be taken into account. But before starting with the analysis, some theoretical points will be discussed briefly, such as the relevance of synchronic variation for linguistic change and the contribution of the meaning of forms to the contexts in which they appear. Then specific predictions will be made on the basis of what the difference in form tells us. After the discussion of the data, certain conclusions will be drawn that concern the relation between synchronic variation and diachronic change. It will be argued that the presence of contexts in which the choice of one of the alternating forms is not obvious may be crucial for diachronic change.

## 2. Some theoretical considerations

In a groundbreaking paper, García defines the basic characteristics of synchronic variation in such a way that, in her view, language change follows as an automatic result of the synchronic situation (1985a). In short, she argues that (García 1985a: 301):

- i. different forms have different meanings;
- ii. because of their different meanings these forms are suitable for different communicative ends;
- iii. because of the different communicative ends to which they are (more or less) appropriate they will be favoured in different types of contexts, and, consequently, will differ in frequency in a particular context;
- iv. different contexts can be rank-ordered in terms of a (communicatively motivated) decline in the relative frequency of one particular form;
- v. the relative proportion in which the forms are used will change steadily in one given direction, which follows from the meaning of the forms;

- vi. this shift in relative proportions will continue until it is no longer compatible with, or lends itself easily to, the abstraction of the original value of the forms, and
- vii. some other value will be abstracted for one or both of the forms.

All of this seems to make sound communicative sense; however there are still some questions that remain unanswered. In the first place, does all synchronic variation necessarily lead to diachronic change? It is clear that some cases of variation are quite stable, or are changing very slowly, or in different phases (see for example De Jonge 1993a for a discussion of this problem). In the cases that variation indeed does lead to linguistic change, what is setting this change in motion?

In order to be able to explain what are the elements that may start the process of change, there are at least two prerequisites:

- a. A clear advantage of one form over the other, in form and/or in meaning. Advantages in form may be that one form is larger than the other, and therefore draws more attention from the hearer (García 1989: 132; Lüdtke 1985: 359, 360).<sup>2</sup> Examples in the past in which both form and meaning have shown to have clear advantages over the competing alternatives are numerous; cf. for instance the case of the appearance of *otros* with the personal pronoun *vos* in Medieval Spanish, rendering *vosotros*, which not only made the personal pronoun larger, but also offered a clear paradigmatic advantage over the simple form since it created a difference in grammatical function that previously did not exist. But moreover, *vosotros* had a clear contrastive meaning that made it particularly convenient for singling out its referent (García et al. 1990).<sup>3</sup>
- b. A group of contexts where both forms may occur quite freely without hindering the opposition.

Normally, linguistic forms are used in contexts where they are the most appropriate or the least inappropriate forms in the language system. Generally, use of other forms may be taken as ungrammatical or at least, less acceptable, doubtful or marked. However, some competing forms may occur in the same context, apparently with very little difference in meaning. It has been sufficiently demonstrated that there is no such thing as free variation (see for instance García 1985b), because

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2. Another motive for some forms to be preferred over others may be that, as occurs quite frequently in the last decades, forms may have their origins in other, prestigious languages, like English, which in many cultures and above all in younger generations, stands for technically advanced and modern.

3. Of course, this advantage disappeared when *vosotros* and *nosotros* were grammaticalized and had replaced the single forms *nos* and *vos* completely.

each form contributes its own value (whether social or referential) to the context. Therefore the use of one form makes it less appropriate than the other, and vice versa, although both alternatives may eventually produce grammatical sentences. Even so, within contexts of variation there seems to be a number of contexts where both forms appear to be equally appropriate and may be used according to the idiosyncratic preferences of each language user (De Jonge 1990: 118–119).

As a starting point for the analysis, we will first examine the meaning of the competing forms in this study.

### 3. The forms and their meanings

The specific forms are two verbal forms; one of them is a simple form, the *gerundio*, and the other is a construction of the preposition *a* ‘to’ combined with the masculine singular definite article *el* ‘the’, rendering *al* ‘to-the’, followed by the infinite form of the verb (see examples (1) and (2)). The *gerundio* may also be used in periphrastic constructions of the type *Juan está trabajando* ‘John is working’, but because there is no variation with the other alternative in this particular context,<sup>4</sup> these and other similar constructions will not be considered, and only the small clause type constructions where both of the alternative forms may appear will be taken into account.

Obviously, both forms share a verb as their most important meaningful unit, but the *gerundio* has a specific ending, generally indicating the on-goingness of the event,<sup>5</sup> whereas the infinitive only indicates the event *per se*.<sup>6</sup> Moreover, the prototypical use of the *gerundio* in Spanish is to modify another event, generally expressed by an inflected verb.<sup>7</sup>

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4. This does not necessarily mean that constructions of the type *está al* + infinitive are impossible in at least some varieties of Spanish, but they are not competing systematically with the *está* + *gerundio* construction. I am indebted to Ricardo Otheguy for drawing my attention to this point.

5. Of course, this is a simplification of the broad spectrum of contexts in which the *gerundio* may appear. For an exhaustive description of its uses and possible interpretations, see Fernández Lagunilla 1999. Since we assume that each and every linguistic form has a single meaning, for the purpose of this paper, the vague meaning as indicated above is sufficient.

6. Also this may be taken as a simplification of the facts. However, as Hernanz states, (1999: 2201) infinitives cannot syntactically establish any relationship with a subject nor express a temporal reference. Hence, the only thing they actually indicate in all cases is the event in itself.

7. The absence of morphological clues to establish syntactical relations with nouns is therefore significant, as opposed to Spanish Past Participle forms, which may exhibit gender and number when used to modify nouns.

The *al*+infinitive construction, however, is a PP and may therefore modify almost anything, although in most cases of this particular construction, the modified element also is another event, similar to the *gerundio*. The most important difference with the latter is that the former has the preposition *a*, which indicates direction, and the definite article *el*, which means, according to Klein-Andreu (1976:417) ‘identified’.

As a preliminary conclusion, we may state that the *gerundio* indicates an ongoing event, occurring at the same time as the main event it modifies, whereas *al*+infinitive indicates an identified event that does not need to co-occur with the main one, but may also occur or have occurred before the main event, in view of its relative givenness indicated by the definite article.

#### 4. The data

As previously mentioned, the data for this investigation were taken from *Niebla*, by Miguel de Unamuno, which was originally written in 1914. This was done in order to see whether, in future investigations, a shift of contexts is to be observed in later texts. For the time being, we will only test the hypothesis for the meanings of the alternatives by means of quantitative distribution analysis and qualitative analysis of individual examples. In Table 1 the total number of occurrences of both forms in the investigated text is shown.

**Table 1.** Number of appearances of the investigated forms in the corpus

Unamuno, <i>Niebla</i> : N/%	<i>Gerundio</i>	<i>Al</i> +infinitive
215/100%	116/54%	99/46%

We see that the *gerundio* occurs slightly more frequently than *al*+infinitive, but in general both forms occur sufficiently to elaborate some quantitative analyses of the distribution, by means of predictions based on the meaning of the forms.

#### 5. Analysis

##### 5.1 Distance of the alternating forms with respect to the beginning of the clause, and with respect to the inflected verb

The first tests that were executed are related to the mean distance of the investigated forms with respect to the beginning of the clause and with respect to the

main verb. Since *al*+infinitive is relatively more given in the context, in view of the presence of the definite article *vs.* its absence with the *gerundio*, we expected the former to occur relatively closer to the beginning of the clause than the latter. On the other hand, the relatively greater independence of the event, expressed by *al*+infinitive, of the main verb in comparison with the *gerundio*, which indicates co-occurrence with the event of the main verb, would give a relatively closer presence with the main verb of the latter, *vs.* the former. The results of these tests are rendered in Table 2.

Table 2. Syntactical position of the investigated forms (*Gerundio vs. Al+infinitivo*)

Mean distance in number of words	<i>Gerundio</i>	<i>Al+infinitivo</i>
#... [X] (Beginning of clause)	6.54	3.04
[X]...V...[X] (Main verb)	3.22	4.19

The results of Table 2 generally confirm our predictions: in fact, *al*+infinitive occurs closer to the beginning of the clause, with a mean distance of approximately 3 words between the beginning and the verb form, whereas this mean distance is over 6.5 words in the case of the *gerundio*. As far as the distance of the forms with respect to the main verb is concerned, we see the opposite, as expected: the mean distance of the *gerundio* is somewhat over 3.2 words, whereas the mean distance of *al*+infinitive is one word more, with almost 4.2. However, the difference is considerably smaller than the observed difference between the forms with respect of the beginning of the clause.<sup>8</sup>

In examples (3) and (4) we see clear cases of these phenomena.

- (3)

*Al*  
at-the

*aparecer*  
appearINF

Augusto at the door of his house stretched-out  
el brazo derecho, [...]  
the arm right, [...]

(U. 2000: 27)
- ‘When Augusto appeared at the door of his house, he stretched out his right arm, [...]’
- (4)

—¡Señorita...!  
—Miss...!

—suplicó Augusto *acercándose* a ella [...]  
—begged Augusto approachGER to her [...]

‘—Miss...! —Augusto begged while approaching her [...]’  
(U. 2000: 72)

8. It is difficult to say whether the observed differences are due to chance or not. To our knowledge, there is no statistical test available for this kind of tests. It is a fact, however, that both tendencies affirm the predictions as stated before, albeit the first much more than the last.

In (3) we see *al*+infinitive in clause-initial position at a distance of 7 words from the main verb *extendió*; in (4) we see a gerund at a distance of two words from the beginning of the clause and at one word from the main verb *suplicó*.<sup>9</sup>

The second test examined the general position of the forms with respect to the main verb. On the basis of the relative givenness of *al*+infinitive due to the definite article, it was expected to occur relatively more pre-verbally (*cf.* (3)) than the *gerundio* (*cf.* (4)), which is not given to the same extent as the former, and should therefore occur more post-verbally. The results of this test are given in Table 3.

**Table 3.** Position of the investigated forms with respect to the main verb

N/%; $\chi^2 = 50.7$ ; $p < .001$	<i>Gerundio</i>	<i>Al+infinitivo</i>
Pre-verbal position	28/24%	72/73%
Post-verbal position	88/76%	27/27%

It is clear that the expected tendencies are indeed observed: 76% of all *gerundios* occur post-verbally, while 73% of the instances of *al*+infinitive occur pre-verbally. The observed skewings are highly significant, as the results of the Chi-square test show: the possibility that these skewings are the result of chance is smaller than one to a thousand ( $p < .001$ ).

## 5.2 Transitivity of the alternating forms

The next step in our procedure to discover systematic differences between the two alternating forms, was to examine different verb types, because in many studies, attempts are made to demonstrate a relationship between different verb tenses, such as simple past tenses, and different verb classes.<sup>10</sup> The *gerundio*, in view of its on-going character, is believed to occur more frequently with imperfective verbs, such as states and activities, or intransitive verbs, whereas *al*+infinitive is expected to occur more frequently with achievements and accomplishments, or transitive verbs. However, because the categories distinguished by Vendler (1967) and the division between transitive and intransitive verbs are not objectively observable, there is much opportunity for debate. Therefore, I have chosen to divide the cases

9. In these cases, instances of direct speech were not taken into account because they have a quite independent status and may therefore consist of whole sentences. These cases may influence the results in a negative way. Instead, the end of the quoted direct speech is taken as the beginning of the relevant clause.

10. For instance, for an interesting attempt to establish a relation between time and event type, with all kinds of references of literature regarding (a)telicity and event types, see Vanden Wyngaerd 2001.



between the ones with a direct object (DO) present in the context versus the ones lacking a DO, as an indication of the verb-type as previously mentioned. I am aware that this is not exactly the way in which transitive and intransitive verbs are generally distinguished in the existing literature, but in my view, this is the only way of observing this phenomenon objectively, since other sources, like grammars or dictionaries, do not provide clear categorisations that may be used in this kind of tests.

At this point, it is important to realize that the traditional distinctions established for verb classes are by no means an objective categorization and may therefore be artificial. If the language system of Spanish in itself does not have formal categories for verb classes, this could be taken as evidence that this supposedly 'universal' distinction is not relevant for Spanish at all and then, it would be expected that both forms do appear with any verb type.<sup>11</sup> Therefore, in order to try to measure different verb types as objectively as possible, we are going to execute our test with presence vs. absence of DO as the relevant variable.

An example of a case where there is no DO present is shown in (5); a case with a DO in (6):

- (5) Mira, ahora poco, *al* *cenar* me parecía como si todo eso  
 look, just now, at-the dineINF me seemed as if all that  
 me fuese cayendo desde la boca en un tonel  
 me was falling from the mouth in a barrel  
 sin fondo (U. 2000: 246)  
 without bottom  
 'Look, just now, when dining it seemed to me as if all of it was falling from  
 my mouth into a barrel without bottom.'

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11. In this paper, as also in my other work, I adopt the basic position of the Columbia School (CS) sign-oriented framework in that it neither assumes nor accepts the existence of an inventory of universal syntactic primitives, such as accepted notions like subject, object, complement, noun, verb, adjective, preposition, reflexive pronoun, passive voice, agent and patient and – for the purpose of this paper – verb classes. Unlike theories within the generative, cognitive, constructionist, functional and other formal syntactic, semantic or pragmatic sentence-oriented approaches, these traditional categories can only be used if accompanied by a precise definition and then a demonstration that the particular category indeed directly fits the specific language under analysis. The development of this position of the rejection of *a priori* traditional universal primitive syntactic categories in CS analyses is discussed in Diver (1986), Diver et al. (2010) and Huffman (2006). Otheguy (2002) presents the various pitfalls of using traditional syntactic terms as initial descriptive categories for analysis and Tobin (1990, 1993, 1994/1995) exemplifies this position in contrastive studies of diverse grammatical systems in English and Hebrew. I am indebted to Yishai Tobin for drawing my attention to this important theoretical question.

The relevant verb is *cenar* ‘to dine’, which has no direct object and may therefore be taken as intransitive.

- (6) Acercóse a un banco, y al palparlo se  
 approachedhehimself to a couch, and at-the touchINFit<sub>i</sub> himself  
 encontró con que estaba húmedo. (U. 2000:31).  
 foundhe with that wasIT<sub>i</sub> wet  
 ‘He approached a couch, and when he touched it, he found that it was wet.’

In (6), the relevant verb is *palpar* ‘touch’; the DO is *lo* ‘it’, which refers to *banco* ‘couch’, so *palpar* is classified as transitive. All examples were classified accordingly; the results of this test are given in Table 4.

**Table 4.** Presence of a Direct Object with the investigated forms

N/%; $\chi^2 = 0.06$ ; $p < .99$	<i>Gerundio</i>	<i>Al+infinitivo</i>
Presence of DO	62/54.4%	52/45.6%
Absence of DO	56/53.4%	47/46.6%

It is clear that the presence or absence of a direct object does not influence the choice of the alternating forms. In both cases, the use of the *gerundio* is slightly more frequent than the infinitive construction, with figures between 53 and 55%. The Chi-square test indicates that this minor observed difference is almost certainly the result of chance ( $p < 0.99$ ).

I do not find this to be really surprising. As has been observed in other studies, differences in the use of verb forms that fall under the TAM approach always suffer from the fact that the cases, observed in reality, do not always a priori match theory. As an example, theoretical linguists are always quite startled when confronted with cases like *estuvo trabajando (durante tres horas)* ‘he has been working (for three hours)’, where an *indefinido* verb form co-occurs with the supposedly imperfect-like *gerundio*, which is however quite frequent in every day Spanish.<sup>12</sup> It is therefore not surprising that the use of certain types of events does not have a correlation with the alternating forms. This implies, then, that the use of these forms once again is the result of the communicative strategies of the speaker, related to the intended message he or she wants to convey, and not to the absolute values of certain events in reality, just like the opposition between Spanish simple past tenses (De Jonge 2000).

12. This is the result of the fact that these studies focus on possible interpretations of isolated phrases and not on the observation of these cases in real context; see for instance Vanden Wyngaerd (2001:76–77).

### 5.3 Contexts neutral to variation

Since we assume that each form has its own single meaning, there is no place for free variation; each and every context where a member of an opposition appears should favour the use of one of the two forms as opposed to the other. However, some contexts may not be crucial to the differences in meaning of the two forms or, vice versa, these differences may be irrelevant to a particular context. Use of one or the other form may therefore be the result of other, possibly more idiosyncratic preferences by the speaker, and not of the particular message he or she wants to convey.

Not surprisingly, therefore, in our corpus we found some examples where both forms may occur, and in which the different meanings of the alternatives do not seem to interfere with the overall message the writer wants to convey, cf. (7) and (8):

- (7) Mira, ahora poco, *al* *cenar* me parecía como si todo eso  
 look, just now, at-the dineINF me seemed as if all that  
 me fuese cayendo desde la boca en un tonel  
 me was falling from the mouth in a barrel  
 sin fondo (U. 2000:246)  
 without bottom  
 ‘Look, just now, when dining it seemed to me as if all of it was falling from my mouth into a barrel without bottom.’
- (8) Y a la hora de cenar, *encarándose* con Liduvina  
 and at the hour of dine, faceGERhimself with Liduvina  
 le preguntó: [...] (U. 2000:86)  
 her askedhe: [...]
- ‘And at the hour of dinner, facing himself with Liduvina, he asked her: [...]’

Although in (7), the use of *al*+infinitive seems to be slightly more natural than the use of *gerundio*, in (8) this is not the case; in Modern Spanish it could even be so that the alternative construction would appear to be more acceptable.<sup>13</sup>

There are also cases, however, where the use of the alternative is not possible, cf. (9) and (10):

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13. In fact, it was when I was faced with cases like (7) and (8) that we decided to see which cases permitted to be interchanged with the other form. First, I have identified all ‘clear’ cases in which the given form would indeed be the preferred one (cf. (9) and (10)), and then the rest was controlled (together with the clear ones) with native speakers of Spanish. Obviously, they had a decisive vote in this matter. We could be on the track of a change in progress here. However, another investigation on a much larger scale is needed in order to corroborate this.

- (9) y poniendo una mano sobre una rodilla de Eugenia la  
and layGER a hand<sub>i</sub> on a knee of Eugenia her<sub>i</sub>  
dejó allí. (U. 2000:77–8)  
stayhe there  
'and laying his hand on Eugenia's knee, he let it stay there.'
- (10) Acercóse a un banco, y al palparlo se  
approachedhehimself to a couch<sub>i</sub>, and at-the touchINFit<sub>i</sub> himself  
encontró con que estaba húmedo. (U. 2000: 31)  
foundhe with that wasit<sub>i</sub> wet  
'He approached a couch, and when he touched it, he found that it was wet.'

In (9), use of *al poner una mano* 'at-the lay a hand' would suggest a certain independence of this event with letting it rest on her knee, which is very improbable, since it is the same hand he leaves on her knee. Use of the *gerundio*, however, suggests a relation between the two events that is quite natural. In (10), on the other hand, the specific construction chosen emphasizes the fact that he accidentally found out that the couch was wet, the touching not being meant to find this fact out.

De Jonge (1990), which examined the innovative use of *estar* vs. *ser* 'to be', already suggested that in the contexts under focus of that study, namely age expressions, there were contexts where either use of *ser* or *estar* was particularly appropriate, the so-called strong contexts, and there were the weak contexts, where the forms could alternate without affecting the communicated message intended by the speakers.<sup>14</sup>

Consequently, we examined whether this open kind of contexts is frequent in our corpus. It should be noted, however, that the skewing of Table 5 is based on speakers' intuitions and may not be taken as objectively observable facts, as opposed to the tables presented so far:

Table 5. Possibility of appearance of alternative form

N/%; $X^2 = 22.3$ ; $p < 0.001$	<i>Gerundio</i>	<i>Al+infinitivo</i>
Alternative possible	30/26%	57/58%
Alternative not possible	86/74%	42/42%

14. This does not imply that these would be cases of free variation; each individual speaker supposedly has his or her own motivation to use one form or another, but the situations in itself do not impose one or another interpretation so that use of any of the two forms would be incoherent.

The results of Table 5 show that approximately a quarter of all contexts where the *gerundio* is used, *al*+infinitive could possibly be used without causing any major changes in the general message conveyed. In the cases of *al*+infinitive, more than half the cases are of this kind.

This observation does not stand by itself. García & Van Putte (1988: 267) previously observed that native speakers of Spanish agreed in 63% of the elicited simple past tense (*indefinido* vs. *imperfecto*) forms, whereas in the rest, apparently, speakers had relative freedom to let their own point of view prevail in their judgment.

## 6. Discussion and conclusion

Numerous studies have shown that either sociolinguistic differences, as shown in the famous studies of Labov (for instance, Labov 1963 and 1969), or differences in meaning, as shown in numerous articles by García and many others (see for instance García 1989 and De Jonge 1993b for clear examples), could account for and justify the observed variation. In other words, it is well-established in variation theory that free variation does not really exist. However, in my view we still cannot get a hold of the mechanisms that makes variation shift to language change. We know that it occurs, but we do not yet know why it starts at a certain point, and not at another.

In this paper I have tried to show that:

- i. the observed skewing in the distribution of the *gerundio* and *al*+infinitive corresponds to a systematic difference in meaning between the two forms;
- ii. in some contexts, these differences in meaning, although always present, did not really matter for the choice of one form or the other as far as the global communicative message is concerned.

In my view, it is precisely these kinds of fuzzy contexts that make a shift in frequency possible, which might eventually start a linguistic change towards the form that is more frequent or that has some other advantage over the other form. That this process should start in these kinds of contexts makes supreme sense: a hearer only perceives a form in a given context, but cannot observe the speaker's communicative intentions directly, which lies at the very heart of communication. The linguistic forms only supply vague clues as to what we want to communicate to one another. When one of the forms has a clear general advantage over the other, for instance because it is larger and therefore draws more attention, the inclination to use this form in cases where it does not really matter is greater than the choice of a smaller, less salient form. Of course, the reasoning could be different; it could also

be so that one form is shorter, and thus more economical, which should motivate its preference in unclear contexts. As far as we know, there is no way to predict the type of general preference for one of the forms.

The results of Table 5 could suggest that *al*+infinitive is used more in fuzzy contexts than the gerunds, but in view of the methodology used and the fact that apparently there is no clear advantage in form and/or meaning for this construction over the *gerundio* makes it impossible to predict why we have this particular preference. Future analyses in later texts and in data taken from spoken language might shed more light on this matter.

That both forms clearly have their own meaning and functions is shown in the last example, where the presented order of the appearing forms is the only possible and coherent one in this particular context:

- (11) Él, *al* *hablarme* así *hablándose*, hablaba al perro  
 he, at-the speak<sub>INF</sub>me so speak<sub>GER</sub>himself, spoke<sub>he</sub> to-the dog  
 que había en él. (U. 2000:259)  
 that have<sub>IMPERS</sub> in he  
 ‘When he spoke to me like that, speaking to himself, he spoke to the dog  
 that was inside of him.’

In this example, Orfeo, the dog of the protagonist, is remembering his master after his death and recalls the moments when Augusto would talk to him (*al hablarme* ‘when he spoke to me’) and the way he did so (*hablándose* ‘speaking to himself’). The second form is modifying the first, which is possible because the *gerundio* is more dependent on another verb than the *al*+infinitive construction, which has more independence. Changing the respective verbs into the other one would render the sentence ungrammatical, basically because the conveyed message would become incoherent.

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# Instructional meanings, iconicity, and *l'arbitraire du signe* in the analysis of the Afrikaans demonstratives

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Unlike the Dutch demonstratives *deze* (*dit*) and, *die* (*dat*), which can be characterized in terms of definiteness and location, Afrikaans *hierdie*, *daardie* and *dié* must be analyzed as signaling the meaning DEIXIS: an instruction to the hearer to seek out and attend to some referent.<sup>1</sup> Accordingly, the Afrikaans demonstratives present a clear counter-example to Langacker's (1997) objection to instructional meanings. We support our Columbia School analysis of *hierdie*, *daardie* and *dié* with both qualitative and quantitative data and reject alternative ones, including Kirsner (2007). The system of Deixis postulated here is congruent with Diessel (1999, 2006), who argues that demonstratives do not always indicate location relative to the speaker but rather function to coordinate the interlocutors' joint focus of attention.<sup>2</sup>

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1. A word of caution about Afrikaans spelling to those who may know Dutch spelling. In Afrikaans as well as Dutch, one indicates stress by writing an acute accent above the first two letters in a sequence of two (or more) letters representing a vowel or diphthong; as in *dóén* 'do' in both languages, the stressed form of the verb *doen*, pronounced [dun]. However, in Afrikaans as opposed to Dutch, an acute accent is written above the letter *i* only if *i* is the sole vowel in the word, as in *ís*, 'am, are, is,' the stressed form of the verb form *is*. Hence, the stressed form of the Afrikaans article *die*, where *i* combines with *e*, is written with an acute accent on only the final *e*, as in *dié*; cf. Donaldson (1993: 46). Afrikaans *dié* should therefore not be confused with the stressed Dutch demonstrative *die* (acute accent on the *i*). We should also indicate at the outset that, except where otherwise noted, all italics and underlining are ours, RSK.

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## 1. Introduction: On instructional meanings

Crucial to the Columbia School view of language as a communicative rather than a representational instrument is its envisioning of linguistic meaning as hint-like or instrumental rather than descriptive; cf. Diver (1969, 1995), García (1975), Reid (1991), and the Columbia School web site <https://www.csling.org>. An early application of this idea is found in Kirsner's analysis (1979) of the Dutch demonstrative adjectives, where he postulates that *deze* (with allomorph *dit*) 'this, these' and *die* (with allomorph *dat*) 'that those' signal not relative distance from the speaker, as is traditionally assumed, but rather HIGH DEIXIS and LOW DEIXIS, respectively a stronger and a weaker instruction to the hearer to seek out and attend to the referent of the accompanying noun.<sup>3</sup> Kirsner argues that the Deixis analysis, which "steps back further" from the messages typically associated with these forms, has the virtue of explaining their use in discourse as well as locative and temporal contexts. He further invokes a number of pragmatic arguments to account for the fact that *deze* and *die* can *communicate* 'near speaker' and 'far from speaker' *without actually signaling it*.

Maes (1995: 173–186) and Janssen (1995) have challenged this analysis, arguing that certain empirical facts of usage can be better explained by positing less sparse meanings than Kirsner's. They argue that the two demonstratives invoke distinct referential regions in discourse rather than a simple opposition of relative deictic strength.

A potential theoretical challenge to the Deixis analysis from within the Columbia School itself is found in Gorup (2006), where contrasts between pronouns of the kind which García (1975) analyses in terms of different degrees of deictic strength (and which was the inspiration for Kirsner 1979) may be viewed as resulting from what she, following Davis (2000), calls an *opposition of substance* between the relatively imprecise meaning of Serbo-Croatian *se*, CENTRAL PARTICIPANT FOCUS, and the meanings of the other pronouns, signaling various kinds of person and number information in addition to CENTRAL PARTICIPANT FOCUS. In other words, the lower deictic force attributed to *se* is not signaled by an explicit meaning LOW DEIXIS but is rather a pragmatic consequence of *se*

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of this paper. I may still disagree with some of their comments and proposals but discovering why I do was extremely useful.

3. For further development of this analysis and both correlational and experimental data supporting it, see Kirsner and Van Heuven (1988) and Kirsner, Van Heuven, and Vermeulen (1987). For an explicit comparison of Columbia School and Cognitive Grammar approaches to the Dutch demonstratives, see Kirsner (1993).

signaling less information than other pronouns. Indeed, in Gorup's analysis, the very semantic substance of Deixis has been rejected.

An earlier theoretical challenge, this time from outside the Columbia School, namely from Cognitive Grammar, is found in Langacker (1997: 245–6):

It is therefore without any sense of shame, distortion, or exaggeration that I assert the cognitive status of phenomena that are sometimes cited as residing in action or interaction, supposedly demonstrating that meaning cannot reside exclusively in the mind (if at all). Consider, for example, the claim that the meaning of a demonstrative is not a concept but an action, specifically an instruction – having greater or lesser urgency – for the addressee to seek out and attend to the nominal referent (Kirsner & Van Heuven 1988; Kirsner 1993). Now, I actually find this proposal both reasonable and insightful. I am inclined to accept it as an important, perhaps even the central, component of demonstrative meaning. Yet in my view a demonstrative's actional character does not in any way obviate its status as a creature of cognition.....

... demonstratives represent a conventionalized, grammaticized means of connecting nominal referents to the subjects of conception. It is thus intrinsic to their value and function that they invoke the ground as a kind of 'viewing platform' from which to seek out a referent and establish it as a mutual focus of attention. Metaphorically, the speaker and addressee can be portrayed as looking out from their shared platform, the direction of their gaze determining which portion of their surroundings will fall within their field of view...

The purpose of the present paper is to analyze the system of demonstratives in a *sister* language of Dutch, Afrikaans. Even if an analysis of the *Dutch* demonstrative adjectives in terms of deictic *scales* (HIGH versus LOW DEIXIS) can no longer be defended empirically and even if there are cogent theoretical objections to it, data from a *sister* language of Dutch – *Afrikaans* – provides evidence that at least the *semantic substance* of Deixis – an instruction to seek out and concentrate attention on a referent – cannot be dispensed with.<sup>4</sup>

We shall proceed as follows. First we present some basic data on Afrikaans. Second, we present our analysis and support it with both qualitative and quantitative data. Third, we consider and reject other possible analyses, including those we ourselves have proposed earlier (cf. Kirsner 2001, 2002, 2007). We conclude with a discussion of several theoretical issues.

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4. Compare the analyses of Spanish *sí* versus *el* in García (1975) with that in García (1996), where deixis as a substance is preserved but where different degrees of deictic force are not postulated as meanings. García (2009) dispenses with deixis altogether.

## 2. The Afrikaans demonstratives: Forms and uses

Alongside the traditional definite article *die*, Afrikaans has proximate and distal demonstrative adjectives *hierdie* and *daardie*, the latter having the colloquial form *daai*. In addition, the stressed form of *die*, written *dié*, is in some cases viewed as an emphatic article comparable to English THE (with /iy/ rather than schwa), but is also said to “function as” a demonstrative adjective. In this latter demonstrative use, *dié* is often characterized as synonymous with and simply a variant of *hierdie*: cf. Ponelis (1979: 91), De Stadler (1989: 362), Carstens (1997: 177), and Müller (2003: 101). For example, it is possible to say both (1a,b) and both contrast with (1c,d):

- (1) a. *Hierdie* naweek in Pretoria.  
‘This weekend in Pretoria.’
- b. *Dié* naweek in Pretoria  
      ‘This weekend in Pretoria’
- c. *Daardie* naweek in Pretoria.  
      ‘That weekend in Pretoria.’
- d. *Die* naweek in Pretoria.  
      ‘The weekend in Pretoria’

And here is an example from a right-wing website with *dié* used proximally, contrasting with the colloquial form of *daardie*, *daai*:

...jy sien die almagtege [sic] se hand gaan al hoe swaarder begin druk op ons in die tye wat voor lê. daar [sic] sal 'n tyd kom wanner [sic] ons sal moet kies, *dié kant van die draad of daai kant van die draad*, daar sal nie plek wees vir draad sitters [sic] nie...  
(<http://www.stormfront.org>)

...you see the Almighty's hand is going to begin to weigh heavier on us in the times which are ahead. there [sic] will come a time when we will have to choose, *this side of the fence or that side of the fence*, there won't be room for fence-sitters...

Nevertheless, we would argue that the characterization of *dié* in demonstrative use as a variant, a mere allomorph, of *hierdie*, is wrong. In contradiction to the references and examples we have just cited, there are occasionally other references in the literature which indicate that sometimes *dié* can be used not only as an apparent variant of *hierdie* but also as an apparent variant of *daardie*. Compare (2) below, taken from the Dictionary of the Afrikaans Language by Schoonees et al. (1956):

- (2) *Dié* boeke is duur, maar hierdie een is goedkoop.  
‘Those books are expensive, but this one is cheap.’

Consider also sentences (3).

- (3) a. \*Kyk na *hierdie* vliegtuie aan die horizon! Is dit Russies?  
 'Look at *these* airplanes on the horizon! Are they Russian?'  
 b. Kyk na *daardie* vliegtuie aan die horizon! Is dit Russies?  
 'Look at *those* airplanes on the horizon! Are they Russian?'  
 c. Kyk na *dié* vliegtuie aan die horizon! Is dit Russies?  
 'Look at *those* airplanes on the horizon! Are they Russian?'  
 d. Kyk na *die* vliegtuie aan die horizon! Is dit Russies?  
 'Look at *the* airplanes on the horizon! Are they Russian?'

Sentence (3c) is much more acceptable – at least to some speakers – than (3a), which is self-contradictory, unless one is pointing to the image of airplanes in a picture of airplanes on the horizon rather than standing at a window looking out at the horizon.<sup>5</sup> This of course suggests that *dié* is neutral, “unmarked” (in the Jakobsonian sense; cf. Tobin (1990: 127–129)) with respect to location, in contrast to the more specific *hierdie* and *daardie*.

The hypothesis of the relative nonspecificity of *dié* is also and rather obviously supported by those exploitations of *dié* for messages of simple emphasis, without indication of location, as in a newspaper editorial below and in a novel by André Brink published in “twin” Afrikaans and English versions bound together:

.....in weerwil van die amptelike planne teen misdaad, die voortdurende betwisting van die jongste misdaadstatistiek en die voortgaande pogings om misdaad in Suid-Afrika met vaardige regeringskommunikasie te probeer hanteer, het misdaad vandag een van die grootste kwessies – indien nie *dié grootste* nie – vir gewone landsburgers geword, en dit oor klutuur, taal- en klasgense heen....

“Misdad: Oorsake en wat om daaraan te doen,”

*Die Vrye Afrikaan*, 19 Oktober 2007

...in spite of the official plans against crime, the unremitting contesting of the latest crime statistics and the progressive attempts to try to deal with crime in South Africa by means of facile government communications, crime today has become one of the biggest issues – if not *THE biggest* -for ordinary citizens, and this across all boundaries of culture, language, and social class....

Sy staar my net aan, met seerkry en onbegrip op haar gesig. En inderdaad, as ek nou daaraan terugdink, dan wás dit 'n keerpunt. *Dié* keerpunt vir ons twee, want eensklaps het dit alles op die spel geplaas wat ons vantevore as vanselfsprekend aanvaar het, alles wat nog altyd veilig en voorspelbaar was. Brink (2006a: 39)

5. This argument was first used in reference to Dutch in Kirsner (1993: 104).

She just stared at me, hurt and incomprehension in her face. And indeed, now that I think back, that was a turning point. *The* (italics in original, = THE) turning point, for her, for me, placing suddenly at risk everything we had previously taken for granted, everything that had been so predictable and safe. Brink (2006b: 37)

When one considers that *dié grootste* and *dié keerpunt* above could be paraphrased as “the *very* biggest” and “the *crucial* turning point”, it is clear that “simple emphasis” also includes the use of *dié* to communicate what Epstein (1994: 145–6), in his discussion of the stressed English article *THE*, calls “paradigmatic prominence,” namely that the particular referent of the associated noun is the ideal or at least an excellent, best known member of the category of entities named by the noun. Other examples are:

- (4) Sy was *dié* aktrise van haar tyd.  
‘She was *THE* actress of her time.’
- (5) Hier is nou *dié* restaurant hierdie  
here is now *THE* restaurant this  
‘Now here this is *THE* restaurant.’
- (6) *Dié* aanleerderswoordeboek vir Afrikaans  
‘*THE* learner’s dictionary of Afrikaans.’

We again point out to the reader that in “official” descriptions of Afrikaans (for reference or pedagogical purposes), such as Gouws, Feinauer, Ponelis (1994: 81), which was the source of these three examples, the form *dié* – elsewhere described as a demonstrative – is characterized instead as a stressed definite article: cf. also Ponelis (1979: 125). We disagree and will discuss the matter shortly.

A crucial way in which the three forms *dié*, *hierdie*, and *daardie* differ from the unstressed article *die* is that they can be used in pointing out and differentiating separate referents referred to with multiple occurrences of the very same noun. Consider (7a,b,c) versus (7d):

- (7) a. *Hierdie* seun en *hierdie* seun het gister skool toe geloop.  
‘*This* boy and *this* boy walked to school yesterday’ [Near speaker].
- b. *Daardie* seun en *daardie* seun het gister skool toe geloop.  
‘*That* boy and *that* boy walked to school yesterday.’ [Far from speaker]
- c. *Dié* seun en *dié* seun het gister skool toe geloop.  
‘This boy and this boy walked to school yesterday.’
- d. ??*Die* seun en *die* seun het gister skool toe geloop.  
??‘The boy and the boy walked to school yesterday.’

A further point, one justifying the grouping of *dié*, *hierdie*, and *daardie* together and opposing each of them to unstressed *die*, is that all may be used as pronouns, without an attached lexical item.

Wil jy hierdie posseël vir jou versameling hê. Nee, *dié* het ek al.  
 Would you like this stamp for your collection? No *that one* I already have.  
 (Donaldson 1993: 145)

Compare: \**Nee, die het ek al*. 'No, the I already have.' (*Die* unacceptable when unstressed.) article.)

- (8) Dis Afrika dié!  
       it-is Africa this  
       'This is Africa!'
- (9) Dis Afrika hierdie!  
       it-is Africa this-specific  
       'This is Africa!'
- (10) Dit was 'n goeie poging daardie  
       it was a good effort that  
       'That was a good effort' (Ponelis 1993: 170)
- (11) Daardie was 'n goeie poging  
       'That was a good effort' (Ponelis 1993: 170)
- (12) ??Dit was 'n goeie poging die  
       It was a good effort the/It was a good effort it.  
       'The?? was a good effort' (Our attempt to gloss the effect of *die* versus *dié*).

In fact, pronominal *dié* may even be used with restrictive relative clauses, as in (13) below, which further underscores its lack of locative specification:

- (13) Dié wat hom ken, het 'n hoë dunk van hom. (Van Schoor 1983: 309)  
       'Those who know him think highly of him.' (Not 'those here' or 'those there')

In the following section, we present our analysis of the Afrikaans demonstratives and additional data which support it. Our discussion will include a demonstration that, while *hierdie* and *dié* may appear superficially to communicate an identical combination of proximity and deixis, they are used in discourse in strikingly different ways, hitherto undescribed in the literature. Scrutiny of the relevant data supports the view that while *hierdie* explicitly signals proximity, *dié* does not.

### 3. The deictic system

#### 3.1 The hypothesis

Our analytical hypothesis is displayed in Figure 1. In contrast to Kirsner's original 1979 analysis of the Dutch demonstratives, where messages of proximity and

distance are held to be pragmatic inferences from the meanings HIGH DEIXIS and LOW DEIXIS, the present analysis of the Afrikaans demonstratives does not postulate different degrees of directive force as *meanings*. Rather the sense of nearness associated with *hierdie* and the sense of distance associated with *daardie* are attributed straightforwardly to the meanings CENTRAL and PERIPHERAL, which the two forms signal in addition to deixis.<sup>6</sup> *Dié* contrasts with both *hierdie* and *daardie* in signaling only DEIXIS; it is the including member of the system.

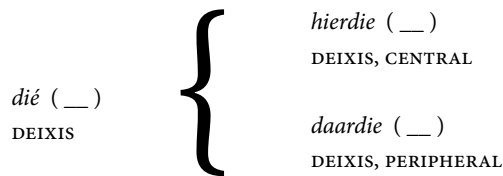


Figure 1. The Afrikaans demonstratives

DEIXIS is defined as earlier, an instruction to seek out and attend to the referent, but with the difference that the referent need not be specified by an accompanying noun. (See below). Note further that the unstressed article *die*, which contrasts with *dié*, *hierdie*, and *daardie* as having no differentiating power on its own and, always being attached to a lexical item, is not a member of this system. We shall assume (but see our discussion in Section 6 below) that unstressed *die* is a member of a System of Differentiation analogous to the one proposed for the English articles by Diver and presented and discussed in Reid (1991, 2006). That is, unstressed *die* contrasts with  $\emptyset$  and 'n \_\_, the latter being the traditional indefinite article which, like English *a(n)*, developed from the numeral one, *een*. The system with nouns in the singular is shown below:<sup>7</sup>

6. The notions of CENTRAL versus PERIPHERAL go back to Diver (1969). Compare Janssen (1995)'s related notion of focal versus non-focal referential concern.

7. For discussion of the notational conventions of Columbia School analyses, see e.g. Contini-Morava (1989:44–51.) A meaning signaled by an explicit signal, such as the morphological chunk *dié*, is written in CAPS. Areas of semantic substance within a system of oppositions which are not explicitly signaled by a signal are written in small letters. Brackets indicate the way in which a particular system categorizes its semantic substance. The reason that the semantic substance of the Afrikaans article system in Figure 2 is written in small letters, as Differentiation, is that there is no signal explicitly signaling DIFFERENTIATION with no further specification (such as SUFFICIENT).

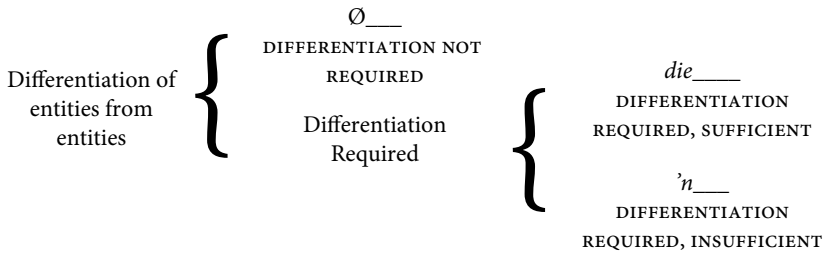


Figure 2. The Afrikaans article system (showing only the part of system with singular nouns)

As soon as one needs to talk about more than a single referent of the noun, the issue of Differentiation – of distinguishing one referent from another – necessarily arises: cf. Reid (1991:79–80). Accordingly, in the intersection of the System of Differentiation with the plural noun section of the System of Number, there is no signal indicating a meaning DIFFERENTIATION NOT REQUIRED. The morphological chunk *die* \_\_\_\_ indicates DIFFERENTIATION REQUIRED, SUFFICIENT as before and  $\emptyset$  \_\_\_\_ indicates DIFFERENTIATION REQUIRED, INSUFFICIENT. The space \_\_\_\_ in both diagrams indicates that the form in question occurs before lexical items; the parentheses around the space in the Deixis system indicates that co-occurrence with a lexical item is optional.

### 3.2 One *dié* or two

Let us now return to the analytical problem posed by Examples (4) through (6) above, such as *Sy was dié aktrise van haar tyd*, where *dié* is traditionally called a (stressed) definite article. Keeping in mind the Columbia School distinction between meaning and message, we may argue that the meaning we have postulated for *dié* – a hint to the hearer seek out and attend to the referent – could be used *not only* to urge the hearer to zero in on, focus attention on (a) one referent out of a plurality of potential competitors (the “demonstrative” message) *but also* to urge the hearer to focus on (b) a referent because the referent simply deserves extra attention, because it is important in its own right or because of its own specific properties. (Compare the message of “paradigmatic excellence” in Examples (4), (5), and (6) above.) The point is that there is nothing in the meaning of DEIXIS which would be incompatible with message (b), in the way that, say, the meaning MORE THAN ONE signalled by the plural ending -s would interfere with the message of “unity,” as in *?Jews, Christians, and Moslems all believe in one Gods*. And it is certainly “simpler” (in the Ockham’s razor sense) to argue that the *dié* used to communicate the one message is the same entity as the *dié* used to communicate the other.



Accordingly, we do not need to adopt the position of dictionaries and pedagogical (and even linguistic) grammars that there are two separate *diés* – one a demonstrative and the other an emphatic article. No matter how useful and traditional labels such as “article” and “demonstrative” are, they simply reflect the purely *message-oriented* character of traditional grammar as an aide to translation and language-learning (cf. Huffman 1997:264) and provide, at best, only the raw material for analysis within a sign-based linguistic theory, one which postulates that the basic units of language are not messages but rather signals of meanings (cf. Reid 2006; Huffman 2006). Furthermore, to set up two entirely homophonous grammatical units *dié* supposedly contrasting directly with each other in the very same position before a noun, contradicts a basic analytical postulate of the Columbia School and, as shown in Reid (2004: 117–122), does not really “buy you anything”, does not increase our understanding of how language works even though at first glance it might seem to. Alternatively, to take the “common sense” approach and postulate one single *dié* which, however, is *polysemous*, has *two* distinct meanings, also violates this postulate. Although the polysemy approach claims that the two *diés* are more closely related than the homophony approach does, namely by linking the two meanings to one signal *dié* rather than two, it still values the distinction between messages or “uses” higher than the unity of form. It may claim that the two uses are related somehow (by linking them to the same *dié*) but does not show *how* they are related, and does not show *why* these two uses are related.<sup>8</sup>

These points perhaps deserves some elucidation. To be sure, making a distinction between “demonstrative” and “stressed definite article” is not only allowable but is also required when analyzing languages like English or Dutch, where there is a three-way contrast and the alleged demonstratives and articles are built up of contrasting phonological segments: *this*, *these* versus *that*, *those* versus *the*; *deze* (*dit*) vs. *die* (*dat*) vs. *de* (*het*). But in Afrikaans, the form(s) are identical. There is

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8. Both alternatives could be formalized within an approach such as Cognitive Grammar, which embraces both polysemy and homonymy as undeniable “facts of life.” One way would be to represent the two uses of *dié* as separate subschemas of one single superschema, with the meaning of that superschema being something like our DEIXIS. Alternatively, there could be one form of *dié*, namely *dié*<sub>1</sub>, linked in a network to the article *die* and a second form of *dié*, *dié*<sub>2</sub>, linked to the demonstratives *hierdie* and *daardie*, with the possibility of even further linking *dié*<sub>1</sub> with *dié*<sub>2</sub> to form a “bridge” between the two systems – one where the differentiation of entities is viewed as still underway (demonstratives) and the other where the differentiation is viewed as complete, or at least as complete enough to no longer be an issue in the ongoing communication (articles). Proponents of the Cognitive Grammar approach might well assert that it is a strength of their approach that it gives full recognition to each distinct use of a form and does not force the analyst into the procrustean bed of having to assign *dié* to exclusively one system or another.

no phonological distinction between stressed demonstrative and stressed definite article: the phonological form of one is exactly the same as the phonological form of the other. Accordingly, the fact that in English or Dutch one uses a stressed article as opposed to a demonstrative to communicate “paradigmatic excellence” (*She was THE actress of her time, Zij was dé toneelspeelster van haar tijd*) does not require us to state that the *dié* in *Sy was dié aktrise van haar tyd* is an article.

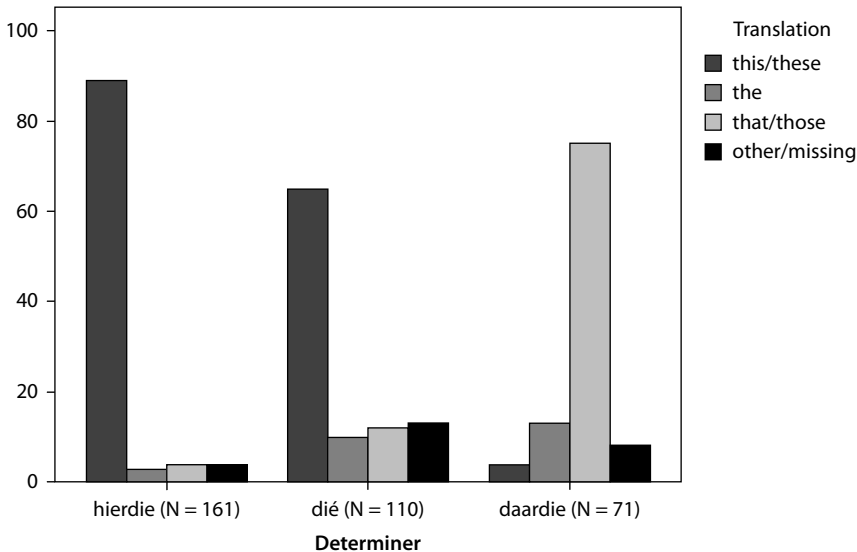
Now in terms of *messages*, we would certainly accept that the degree of “demonstrativity” is greater when *dié* is used to communicate a demonstrative message than an emphatic one, for it is only then that the hearer is instructed to actively differentiate some entity or entities from others within the visual or conceptual field (in which case an accompanying lexical item, a noun, may be brought into play). When, on the other hand, one is communicating “paradigmatic excellence” of an entity, or some other quality meriting attention, such as great size or importance, the picking out of one referent versus others is less relevant or is taken to be already accomplished; the noun indicates the entire category, which we would certainly agree is an “article” kind of message. And indeed in the latter case, one must have the lexical item (noun) – such as *aktrise* ‘actress’ – there to indicate precisely what it is which is so noteworthy: *Sy was dié aktrise van haar tyd* ‘She was THE actress of her time’ but not *Sy was dié van haar tyd* (i.e. without the noun, which would have to be glossed ungrammatically as ‘the of her time,’ not pronominally as ‘that one of her time’). Which of course could be cited as “evidence” that the *dié* here is an article, since articles are not used without nouns. But within a sign-based framework not wedded in advance to universal part-of-speech categories, these facts could just as well be used to show how one can manipulate the very same signal-meaning pair *dié* – DEIXIS to communicate different messages in different linguistic and extra-linguistic contexts. After all, it would be rather difficult for a hearer to infer a message of “paradigmatic excellence” if the speaker did not use the noun to provide a reference point.

A final point is that, when one is dealing with concepts which may be categorized in different ways, one language may choose one alternative and the other language the other, as when “eyeglasses” are considered singular as in Dutch, where one says *M'n bril ligt op tafel* ‘My glasses lies on the table,’ but plural in English, as in *My glasses are on the table*. Of course we find this even within a single language; cf. Reid’s study of English verbal number (1991), where the very same noun phrase (e.g. *group*) occurs in different citations as both singular and plural. And Kirsner (1993: 84) discusses a Dutch example where the use of the “distal” demonstrative *die* (*dat*) must be translated into English not with a demonstrative but with an article: *De schrijvers aanvaarden dit conflict en kiezen in dat conflict zelfs onvoorwaardelijk partij* ‘The authors accept this conflict and even unconditionally take sides in the/?that conflict.’ What this suggests is that if it is possible for language

A to use a demonstrative to communicate one message and language B uses an article to communicate what seems to be a very similar message, one does not have to consider the demonstrative in A “actually” an article or the article in B “actually” a demonstrative. Even if the semantic opposition between *dié* and *die* is exactly the same as that between English *THE* and English *the*, the cut-off point from one category to the other does not have to be the same. Hence, the very fact that Afrikaans *dié* can be used to communicate a message which in English would be communicated with stressed *THE* does not force one to categorize the Afrikaans form *dié* as an article.

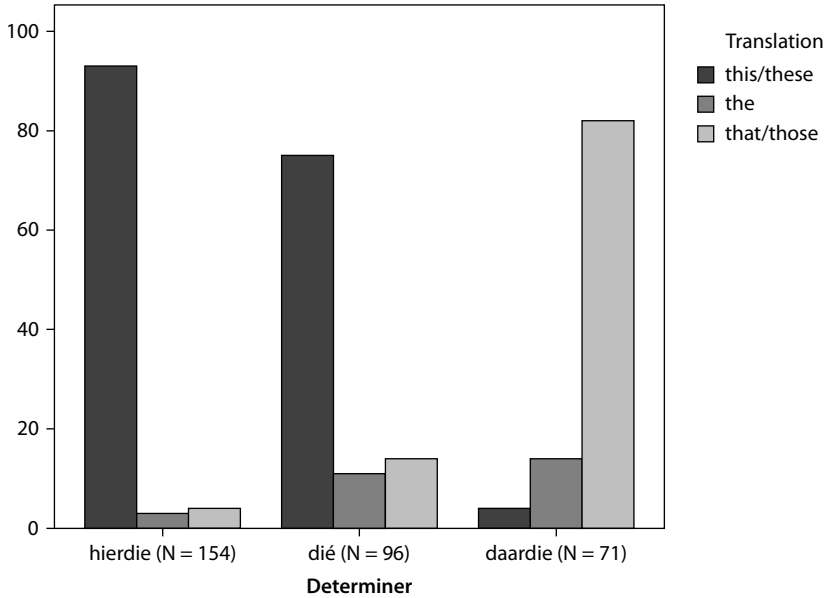
### 3.3 How *dié* can communicate proximity without explicitly signaling it

The reason *dié* is sometimes considered a mere allomorph of *hierdie* is that in many cases, it does in fact communicate proximity. The most efficient way of demonstrating this is to examine how each of *hierdie*, *daardie*, and *dié* are translated into each of the English articles and demonstratives in published English translations of Afrikaans texts. Figure 3 displays the data gathered from Coetzee (1990a), Leroux (1962), and Van Heerden (1986). As can be seen, more than half of the instances of *dié* are translated with *this/these*, namely 65%, which puts it much closer to *hierdie* (89% of instances translated with *this/these*) than *daardie* (4%).



**Figure 3.** Percentage of the published English translations of Afrikaans demonstratives in Coetzee, Leroux 1962, and Van Heerden 1986 as articles or demonstratives, something else/missing

If we now exclude the data for demonstratives which in published translations were rendered with something other than a demonstrative or article or which were omitted entirely, we may clearly see the relatively unspecified character of *dié*. Consider Figure 4:



**Figure 4.** Percentage of the translations of the Afrikaans demonstratives as only English articles or demonstratives

As can be seen in Figure 4, Ninety-three percent of the instances of *hierdie* are translated with *this/these* versus 75% of the cases of *dié* and 4% of the cases of *daardie*, which is the same relationship as seen in Figure 3. But if we now consider the remaining instances of *dié* and *daardie* which were translated with either a distal demonstrative or definite article, we see an interesting difference between the latter two. Of the 25% of the cases of *dié* not translated with the proximate demonstrative, we note that nearly the same number of instances are translated with *the* (12%) as with *that/those* (13%). This contrasts sharply with the situation seen in the *daardie* sample, where 14% of the instances are translated with *the* but 82% with *that/those*. To summarize: (1) *dié* is translated with *this/these* less frequently than *hierdie* is but far more frequently than *daardie*, (2) the remaining cases of *dié* are almost evenly split between *the*-translations and *that/those*-translations versus the nearly 6 to 1 favoring of *that/those*-translations evidenced by *daardie*.

We argue that these data are consistent with our claim in Figure 1 above that *dié* occupies an intermediate (neutral, unmarked) position between *hierdie* and *daardie*. The only way for this to be possible is to postulate that *dié* explicitly signals neither nearness nor farness but is neutral concerning these concepts.

So if *dié* does not specify location with respect to the speaker, by what mechanism or mechanisms does it communicate proximity in the *majority* of cases rather than, say, in only 50% of the cases? We suggest that there are two pragmatic factors involved.

First, as originally outlined in Kirsner (1979:369–71) with respect to the Dutch demonstratives, the pragmatics of pointing out are such that the speaker is a natural coordinate in the speech act. Furthermore, an object can be pointed out to the hearer most effectively if it is relatively near the speaker, so that all its features can be clearly seen and the speaker can direct the hearer's attention to it most precisely. Since there are fewer potential locations near the speaker than far from him, the hearer's inference that the referent is near the speaker makes maximally informative the speaker's instruction by way of *dié* to pay attention to the referent. We attempt to illustrate this in Figure 5.

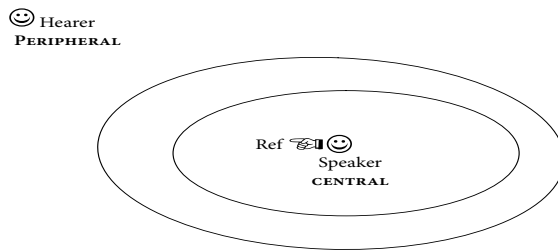


Figure 5. Fewer potential locations near the speaker

Accordingly, one reason why *dié* tends to be interpreted as pointing near rather than far, even though we argue that it does not specify location, is that near pointing is, as it were, “pointing par excellence.” The speaker is directing attention to the referent without saying that it is near or far, and the hearer must turn to the speaker for guidance.

The second factor, invoking the natural egocentricity of the speaker, is that most of the time speakers will be interested in communicating about things which they themselves experience, which are more likely to be characterized as CENTRAL than PERIPHERAL. We argue that it is this egocentric bias which is projected upon the “blank sheet” of unmarked *dié*. Note, for example, that in the sample used in

producing Figure 3 above, there are 161 instances of *hierdie* and 77 of *daardie* so that in the total sample of 238 “marked” demonstratives, 68% of the cases are *hierdie*. This is nearly identical to the percentage of unmarked *dié* translated as ‘this/these’: 65%. Evidence is also provided by Google. A search on the internet carried out on 7 May 2008 yielded 1,580,000 “hits” for *hierdie* versus only 241,000 hits for *daardie* – a ratio of more than 6 to 1. And a search of the 19 October 2007 edition of the bimonthly newspaper *Die Vrye Afrikaan* (61,170 words) produced 217 instances of *hierdie*, 22 of *daardie*, giving a 9.9 to 1 favoring of *hierdie*. Even if we include in our sample the 62 instances of “unmarked” *dié* which we discovered, we still find that *hierdie* accounts for 72% of all 301 demonstratives.<sup>9</sup>

### 3.4 More on the opposition between *hierdie* and *dié*

Given that *dié* so often communicates messages of proximity and given that it is so often characterized as a mere variant of *hierdie*, we will focus much of the remaining discussion on the opposition between these forms, one characterized within Columbia School linguistics as an opposition of inclusion; cf. Diver (1987). According to our hypothesis, *hierdie* signals DEIXIS, CENTRAL while *dié* signals only DEIXIS. The contrast between *hierdie*, with its explicit nearness to the speaker, and *dié*, which – because of the pragmatics of pointing – only *suggests* nearness to the speaker may be profitably compared to the difference between explicit and implicit reference points in sentences (14), used in Langacker’s discussion of his concept of subjectivity (1991: 328–9):

- (14) a. Vanessa is sitting across the table from me!  
b. Vanessa is sitting across the table!

Here, although the objective a-sentence (analogous to *hierdie*) explicitly mentions the speaker as the reference point and the subjective b-sentence (analogous to *dié*) does not, the b-sentence can be taken as having the same reference point as the a-sentence. When, however, the actual reference point is elsewhere, as when the

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9. Nevertheless, we must caution that these overall trends are not found in every text. A search of the 20,000-word Korpus Gesproke Afrikaans of *spoken* Afrikaans compiled at the Centre for Text Technology of North-West University at Potchefstroom yielded 162 hits for *hierdie* versus 8 for *daardie* but also produced 253 instances of *daai*, the colloquial form of *daardie*, so that the ratio of *hierdie* to *daai* + *daardie* was only 1 to 1.6. Here, evidence for an egocentric bias must be found in the personal pronouns: 2364 occurrences of *ek* ‘I’, 1306 occurrences of *jy* ‘you’ and 382 occurrences of *hy* ‘he’. Thanks to Prof. Gerhard B. van Huyssteen for making the Potchefstrooms corpus available to me. The searches were performed with the AntConc 3.2.1 lw (Windows) concordance program. I thank my colleagues Hongyin Tao and Tim Tangherlini for recommending this program.

entire table scene is viewed in a detached way, from the side, only the sentence with the explicit reference point is appropriate, as in Langacker's example (15):

- (15) a. Look! My picture's in the paper! And Vanessa is sitting across the table from me!  
 b. ?Look! My picture's in the paper! And Vanessa is sitting across the table!

We might anticipate, then, that *hierdie* (which explicitly locates the referent with respect to the speaker) would be associated with more objective or detached messages than *dié*.

A second reason why we might expect such a contrast is that the extra precision of *hierdie* (congruent with a message of calm assessment) would be inconsistent with excited, exclamatory messages which, however, would be a reasonable exploitation of unspecified *dié*. Consider, as very rough, suggestive analogies to *hierdie* and *dié*, the sentences (16) and (17) below, where the extra precision of information in the *b*-sentences clashes with an excited, exclamatory message, while the less specific *a*-sentences are fine.

- (16) a. I want this crap out of here!  
 b. ?I want this specific crap out of here!'

 (17) a. Look! That airplane is crashing!  
 b. ?Look! That airplane is crashing precisely 347 feet from us!

This entails that it should come as no surprise that the messages of "simple emphasis" or "paradigmatic excellence" mentioned above in Section 2 are communicated with *dié* rather than *hierdie* or *daardie*. While it makes sense that the sentence *Ek het dié kêrel nog nooit met 'n oog gesien nie* 'I have never laid eyes on this fellow before' (Ponelis 1979:91) can be paraphrased with *Ek het hierdie kêrel nog nooit met 'n oog gesien nie*, it also makes sense that *Sy was dié aktrise van haar tyd* 'She was THE actress of her time', cannot be paraphrased with *?Sy was hierdie aktrise van haar tyd* '?She was this particular actress of her time'. *Hierdie*, signaling CENTRAL in addition to DEIXIS, suggests that partitioning potential referents into different regions ("this one or these" as opposed to "that one or those") is somehow a crucial component of the message. *Dié*, saying nothing about centrality or peripherality, does not and is therefore better suited for communicating "pure" attentionworthiness.

Finally, from a theoretical perspective, we note that any difference in the detachment or sobriety of messages communicated with one demonstrative, *hierdie*, versus the involvement or vividness of the other demonstrative, *dié*, makes perfect sense given the difference between including and included meanings in an opposition of inclusion or in an opposition of substance (cf. Davis 1995; Gorup 2006). Such oppositions are known to form a *de facto* if not *de jure* oppositions of inclusion; i.e. *de facto* marked-unmarked relationships in the Jakobsonian sense.

The general point is that, given the instrumental rather than representational character of grammatical meaning and the role of inference in communicating messages (cf. Huffman 1997), the grammatical and lexical hints which the speaker presents to the hearer in an utterance do not so much say exactly what the speaker wants to communicate but rather do *not* say what he does *not* want to communicate. The more precise the hints, the less freedom is given to the hearer's imagination.

For example, in Diver's analysis of the System of Place in Homeric Greek (1984: III-125. 1995: 91–92), the genitive case, which signals the meaning RELATION TO A PLACE, is much less precise than – and includes the meaning signaled by – both the dative (AT A SPECIFIED PLACE) and the accusative (WELL-ORDERED IN RELATION TO A SPECIFIED PLACE). As a consequence, the less specific genitive is used in signaling all sorts of place relationships compatible with jerky or dramatic movement, such as “up and down” (of arrows rattling around in the quiver on the shoulders of an angry god striding down a hill) or “from side to side” (the motion on a road of horses running wild). The more precise dative and accusative communicate more staid relationships such as “in their midst” or “standing in a circle.” The analogy of the Greek genitive with Afrikaans *dié* and of the dative and the accusative with *hierdie* and *daardie* will be clear.

An additional parallel to our analysis of the Afrikaans demonstratives is Davis's discussion (1995) of the contrast between the Italian pronouns *lui* and *egli*, both of which may be glossed as ‘he’ but where *lui* often communicates messages of “intensity.” In Davis's analysis, *lui* and *egli* share the meanings MALE, OTHER THAN SPEAKER AND HEARER, and LOW ATTENTION, but the non-intense, undramatic *egli* is more precise than *lui* in that it bears an additional meaning, CENTRAL, from the System of Focus, referring to participants in the event specified by the verb.

#### 4. Quantitative data on the use of the demonstratives in discourse

Because both *hierdie* and *daardie* specify the location of the referent while *dié* does not, both may be considered to be more precise than *dié*. Furthermore, because there are fewer locations near to the speaker than far from him (as we argued in Section 3.3 above), *hierdie*, asserting the centrality of the referent in some sense, may be said to localize the referent more precisely than *daardie*. *Dié*, signaling neither centrality or peripherality, would then have to be characterized as providing by itself (i.e. without any accompanying physical gestures such as pointing) the least information about the referent's location. Now in his discussion of number in the Homeric Greek noun, Diver has argued (Diver 1987: 104) that the more a speaker is interested in some aspect of a message (person, event), the more information he will provide about that aspect. If we now consider the use of demonstratives not to direct attention to entities in physical space but to introduce and track referents



in spoken or written discourse, we might hypothesize that they would form two parallel *de facto* pragmatic scales, as shown in Table 1.

**Table 1.** Pragmatic alignment of meaning signaled, precision of location, and degree of importance to the communication

Signal	Meaning in system	De facto precision of location with respect to speaker	De facto degree of importance of referent
<i>hierdie</i>	DEIXIS, CENTRAL	high	high
<i>daardie</i>	DEIXIS, PERIPHERAL	mid	mid
<i>dié</i>	DEIXIS	low	low

We will test this hypothesis in two ways. First, as a kind of *hors d'oeuvre*, we will briefly examine the kind of nouns which turn up with each demonstrative. Second, we shall examine the use of the demonstratives to refer to items in earlier discourse. Our corpus is a 62-page monograph by Ampie Coetzee entitled *Letterkunde & Krisis: 'n Honderd Jaar Afrikaanse letterkunde en Afrikaner-nasionalisme* (Bramley: Taurus, 1990) on the development of Afrikaans literature form 1875 to 1976 and after.

To see if there was any support for the notion of a *de facto* degree of precision of reference, we examined the words in the text having to do with time. We encountered the general word *tyd* 'time' as well as the more precise words *oomblik* 'moment,' *periode* 'period,' and *tydperk* 'period, age, epoch,' each specifying a particular sort of time. We would expect that the more precise words, indicating a higher degree of conceptual differentiation, would co-occur with the more specific, more precise demonstratives *hierdie* and *daardie* more often than the simple word *tyd* would. Our results are shown in Table 2.

**Table 2.** Temporal nouns and demonstrative adjectives in Coetzee 1990

	<i>hierdie</i>	<i>daardie</i>	<i>dié</i>
<i>oomblik</i> 'moment'	4	0	0
<i>periode</i> 'period'	1	0	0
<i>tydperk</i> 'period, age, epoch'	2	0	0
<i>tyd</i> 'time'	7	2	7

Our hypothesis of a scale is confirmed at least for *hierdie* versus both *daardie* and *dié*. All seven occurrences of the more precise words referring to time co-occur only with *hierdie*, as opposed to less than half of the sixteen occurrences of *tyd*.<sup>10</sup>

10. This is reminiscent of the 4th count of Kirsner (1987) where *deze* tended to be used with nouns serving as precise technical philosophic terms and *die* with "run-of-the-mill", ordinary nouns.

We now turn to the second prediction, concerning the use of the demonstratives to refer to earlier entities in the discourse. Now in a text such as Coetzee's, it is apparent that, as the discourse proceeds, certain referents are simply repeated, but others are developed, rephrased, and reinterpreted. Information is "rechunked."<sup>11</sup> It would be absurd to have an essay in which precisely the same referent is referred to in precisely the same way again and again. For the discourse to progress at all, for some argument or analysis to be presented, there must be rephrasing, reinterpretation, development. What might we expect, then, in terms of the hierarchy of demonstrative precision and the use of demonstratives in the text?

Because such development is the central concern of the author, we would anticipate that the most precise demonstrative, *hierdie*, would tend to be used in NPs which rephrase earlier referents, that the least precise demonstrative, *dié*, would tend to be used with NPs which repeat earlier referents literally, and that *daardie* would occupy an intermediate position, half of the time being used to repeat and half of the time to rephrase. Our specific hypothesis is shown in Table 3:

Table 3. Predicted interaction of demonstrative and reference type

Demonstrative	Reference type	
	Rephrasing of referent	Literal repetition
<i>hierdie</i>	Favored	Disfavored
<i>daardie</i>	Intermediate	Intermediate
<i>dié</i>	Disfavored	Favored

11. This section was suggested by the discussion of the deployment of Dutch *deze* (*dit*) and *die* (*dat*) in discourse found in Kirsner and Van Heuven (1988:225–231). Bob de Jonge has argued that it is easier to judge intersubjectively whether a noun is being repeated in a text with the same referent as before than it is to confirm or disconfirm that an earlier referent is being described or paraphrased or summarized (about which there may be disagreement in interpretation). In response we must counter that the difference is one of degree, not of kind; interpretation is unavoidable in either case. Even with what looks like literal repetition of a noun, one might be encountering not an uninterrupted maintenance of reference over a stretch of text but a re-introduction of it after a break. With "rechunking," we merely mean that the demonstrative-bearing expression is, first, not introducing an entirely new referent out of the blue, totally unrelated to the previous discourse, and second, that something else is happening other than the simple repetition of an earlier referent using the same noun as was used in the earlier mention. It seems to us reasonable to suggest that in such cases the referent is somehow being "developed" in a way which moves the discourse beyond simple repetition.

A few examples. The following paragraph shows demonstratives used in literally repeating earlier referents:

Die “appropriasie” van die ontwikkelende Afrikaanse taal romdom 1875 as aansporing tot nasionale bewussyn, en die skep van ’n letterkunde om *daardie bewussyn* te onderskraag, plaas *dié letterkunde* binne die politieke arena vanaf die begin; en binne *daardie arena* hoort dit gesien te word – maar dan nie net soos die Afrikaner dit gesien het nie, of met wit heersende klaswaardes nie.

(Coetzee 1990a: 9, italics and underlining RSK)

The ‘appropriation’ of the developing Afrikaans language round about 1875 as an incitement to national consciousness and the creation of a literature to strengthen *that consciousness* have sited *this literature* within a political arena from its beginning, and it is within *this arena* that I would like to view it – but then not only as the Afrikaner has seen it, or in terms of white ruling class values.

(Coetzee 1990b: 324). [Note that *daardie arena* is rendered in the published translation as *this arena*, not *that arena*.]

And here is a paragraph showing *hierdie* being used in reinterpreting earlier material:

Soos Van Wyk Louw was Brink ’n apostel van vernuwing, met die drang om nuwe skryfwyses in Afrikaans te bring. Waar Leroux intertekstueel gewerk het, het Brink die tegniek van die literêre verwysing benut: ’n literêre skrywer wat uiteindelik die letterkunde binne die politiek gebring het, maar met behoud van literêrheid, en veral van die esteties selfbewuste. *Hierdie selfrefleksiwiteit* waardeur die aandag gedwing word na die skeppingsproses, die aksentuering van die materiaal waarmee hy werk, sal die gemene deler van sy tekste bly...

(Coetzee 1990a: 42)

Like Van Wyk Louw, Brink was an apostle of renewal, of introducing new kinds of writing into Afrikaans. Where Leroux worked intertextually, Brink appropriated the technique of the literary allusion: a literary writer, who eventually brought literature into politics, but with the retention of ‘literariness’, and especially aesthetic self-consciousness. *This self-reflexiveness*, drawing attention to the process of creation, accentuating the materials with which he works, will remain the common denominator of his texts...

(Coetzee 1990b: 352)

Figure 6 presents the results of a count of those demonstrative adjective-bearing NPs in the Coetzee essay which can be taken as referring to earlier referents rather than introducing new referents. This amounts to about 85% of all demonstrative adjectives in the corpus.

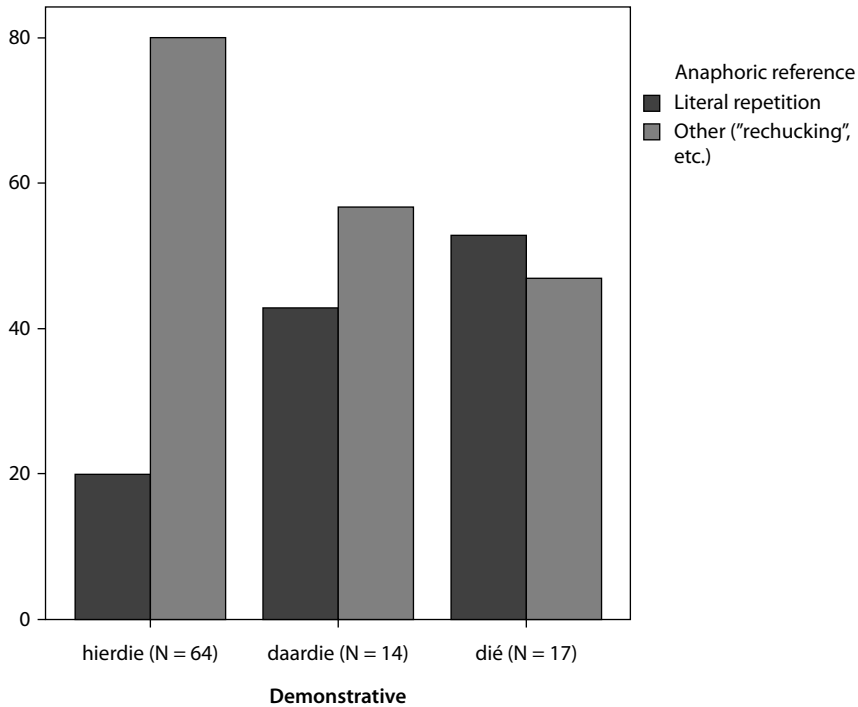


Figure 6. Observed interaction of demonstrative and reference type in Coetzee 1990

Our prediction is confirmed: as one proceeds from *hierdie* to *daardie* to *dié*, the percentage of rephrasing NPs falls from 80 to 57 to 47 and the percentage of repeating NPs rises from 20 to 43 to 53. Although the sample is small, the figures lend further support to the analysis of the demonstratives sketched in Section 3.<sup>12</sup>

Additional quantitative data on the use of the Afrikaans demonstratives in discourse is provided by Wessels (1994), an autobiographical account of how an Afrikaner politician raised during the apartheid era came to reject apartheid ideology and ultimately played an important role in bringing about the new,

12. Although the history of Afrikaans is complex and fraught with controversy, we may note here that our synchronic analysis seems to fit with what is known about the development of these forms. *Hierdie* and *daardie* are relative innovations brought in to compensate for the lack of specificity of *dié*. These latter two forms evolved or were borrowed in situations of multiple language contact. See further Roberge (2001).

democratic South Africa. Inspection of of the first 200 demonstratives in the book (about 70% of the text) yielded the distribution seen in Table 4.

**Table 4.** Distribution of demonstratives in Wessels 1994 versus nul hypothesis

Demonstrative	Observed N	Expected N	Residual
<i>hierdie</i>	94 (47%)	66.7 (33%)	+27.3
<i>daardie</i>	37 (18%)	66.7 (33%)	-29.7
<i>dié</i>	69 (35%)	66.7 (33%)	+2.3
Total	200 (100%)		

If demonstrative choice were random (i.e. the “null hypothesis”), there would be no reason for preferring any one demonstrative to any other at any point in the text and we would expect to find equal numbers of *hierdie*, *daardie*, and *dié*, each being 33.3% of the total of 200. But what we see instead is that we have 14% more *hierdie* than expected, 15% fewer *daardie*, and 2% more *dié*. Which means that we have 12% more instances of *hierdie* than of *dié* and 17% more instances of *dié* than of *daardie*, ratios of *hierdie*: *dié*: *daardie* of 2.5:1.9:1.0.

We may argue that this makes sense, as follows. First, it is reasonable that *daardie*, explicitly characterizing the referent as peripheral, would not be as frequent in a corpus as the other demonstratives because, in a coherent discourse, entities are usually first introduced and then developed further. If one wants to keep talking about something (so that one is focussing upon it), one would eventually characterize it as central, with *hierdie*, rather than keep on referring to it explicitly as peripheral, with *daardie*. If one characterizes the entity as peripheral, it suggests that the speaker is moving away from that entity, in space, time, or concern. Second, it is reasonable that future topics, entities which will be discussed and developed further later on, would first be mentioned at least one time after introduction rather than immediately being developed further (“rephrased, rechunked”). So we would expect *dié* would tend to be used for the repetition and *hierdie* for the further development, which would continue. The relative frequencies of *hierdie* > *dié* > *daardie* which we have found may be understood given their respective meanings and the normal flow of attention in discourse.

Figure 7 shows the breakdown of the 200 demonstratives when the expressions they contain are categorized as (a) literally repeating a previous noun, (b) referring to previous material in some other way (“non-literal repetition,” rephrasing, “rechunking,” and (c) nonanaphora, i.e. not dealing with earlier referents. (As in Figure 6, the bars in Figure 7 show the percentage of the sample for each demonstrative categorized by use.

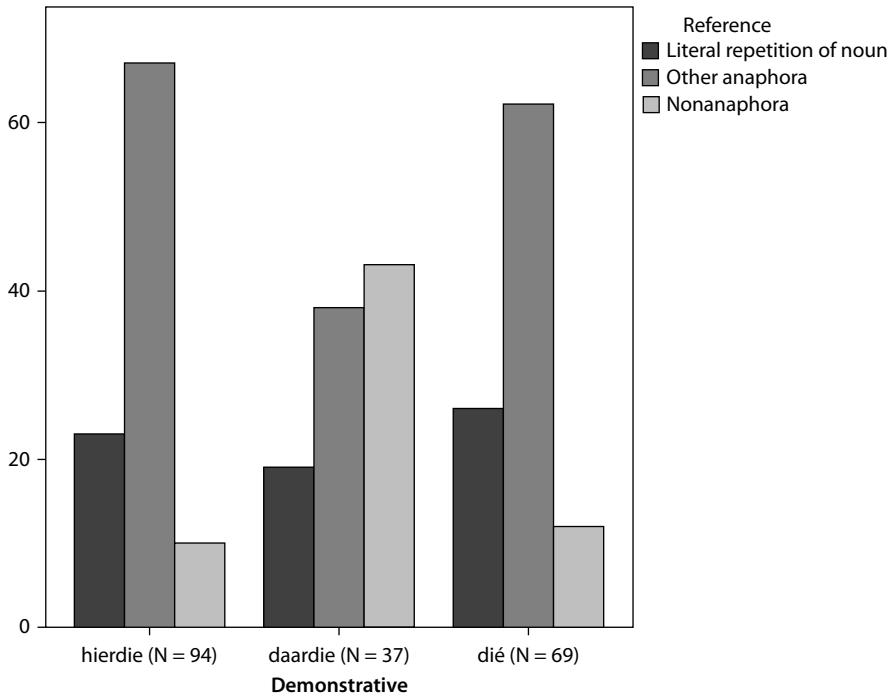


Figure 7. Interaction of demonstrative and reference type in Wessels 1994

We see immediately that the distribution of the Wessels data differs from that for the Coetzee data seen in Figure 6. First of all, the *daardie* sample does not occupy an intermediate position between *hierdie* and *dié*: the percentage of the *daardie* sample used for literal repetition is less than that for the other two demonstratives.

When, in order to facilitate comparison with Figure 6, we temporarily *exclude* the nonanaphoric cases and limit ourselves to just the anaphoric ones (i.e. the leftmost two bars for each demonstrative in Figure 7), we see that the ratio of literal repetition cases to the rephrasing or “rechunking” cases goes from (in raw numbers) 22/64 or 0.34 for *hierdie* to 7/14 or 0.50 for *daardie* to 18/43 or 0.42 for *dié*, with the ranking from most repetition to least of *daardie* > *dié* > *hierdie*. The comparable ratios for the data plotted in Figure 6 are 13/51 or 0.25 for *hierdie*, 6/8 or 0.75 for *daardie*, and 9/8 or 1.13 for *dié*, exhibiting the ranking (most repetition) *dié* > *daardie* > *hierdie* (least repetition), as Figure 6 clearly shows.

Focussing now on the relationship of *hierdie* to *dié* we see that the relative favoring of *dié* for literal repetition and of *hierdie* for other anaphora (rephrasing, “rechunking”) which we find in Figure 6 is still visible to some extent in Figure 7.

Twenty-three percent of the 94 cases of *hierdie* are used in literally repeating earlier nouns and 67% for rephrasing, versus 26% of the 69 cases of *dié* for repetition and 62% for rephrasing. This trend is not as spectacular as the figure of 20% versus 80% for *hierdie* and 53% versus 47% for *dié* in Figure 6, but it goes in the right direction.

Because Figure 7 includes cases for the *non*-anaphoric use of the demonstratives, when they introduce referents which cannot be interpreted as referring to earlier material, we may now notice a second peculiarity of *daardie*. Whereas 10% of the *hierdie* sample (9 cases) and 12% (8 cases) of the *dié* sample are used in non-anaphoric reference, nearly half – 43% – of the *daardie* sample of 37 instances are so used: 16 cases. This would seem to fit with our earlier remark that the relatively low frequency of *daardie* in the overall sample (18%) is due to its lesser suitability for topic development as a discourse progresses. This difference between the samples is reflected in the relative frequency of time adverbials in the three groups, referring to circumstances rather than entities or “things” developed and talked about in longer stretches of discourses. We observe that 2 of the 9 cases of *hierdie* (22%) refer to time (*oomblik* ‘moment’ and *eeu* ‘century’) and 4 of the 8 cases of *dié* (50%) refer to time (*keer* ‘time’ [as in ‘for the second time’], *tyd* ‘time’, and *nag* ‘night’), but fully 13 of the 16 cases of *daardie* (81%) do: *aand* ‘evening’, *dag* ‘day’, *tydstip* ‘point in time’, etc.

Now given that the distributional differences between *hierdie* and *dié* in Table 7 are not nearly as sharp as in Table 1, it would be useful if the Wessels sample data could provide a different kind of evidence for our claim that *hierdie* would be used for more important referents than *dié* (as we proposed in Table 1). Such support is provided by a count of how the demonstratives skew with the relative animacy of the referent. Figure 8, plots the percentage of the sample of each demonstrative at three degrees of animacy (or rather “humanness”) of the referent. Beginning at the left, with human beings as the referent, we notice that the percentage of the *hierdie* sample and the *dié* sample are the same, 12%, both smaller than the figure for *daardie*, 22%. However, when we move to the center columns for noun-phrases referring to human activities (e.g. *verkiesing* ‘election’, *gesprek* ‘conversation’, *toespraak* ‘speech, address’), we find 52% of the *hierdie*-sample, 37% of the *dié*-sample, and 16% of the *daardie*-sample. So taking both categories together, we find that 64% of the *hierdie*-sample is used to refer to anything human, versus 49% for the *dié* sample and 38% for the *daardie*-sample. Assuming that human referents will be, by and large, more important to human speakers and hearers than non-human referents (especially in a political autobiography such as Wessels), the figures support the ranking of perceived importance of referent of *hierdie* > *dié* > *daardie*. See Figure 8.

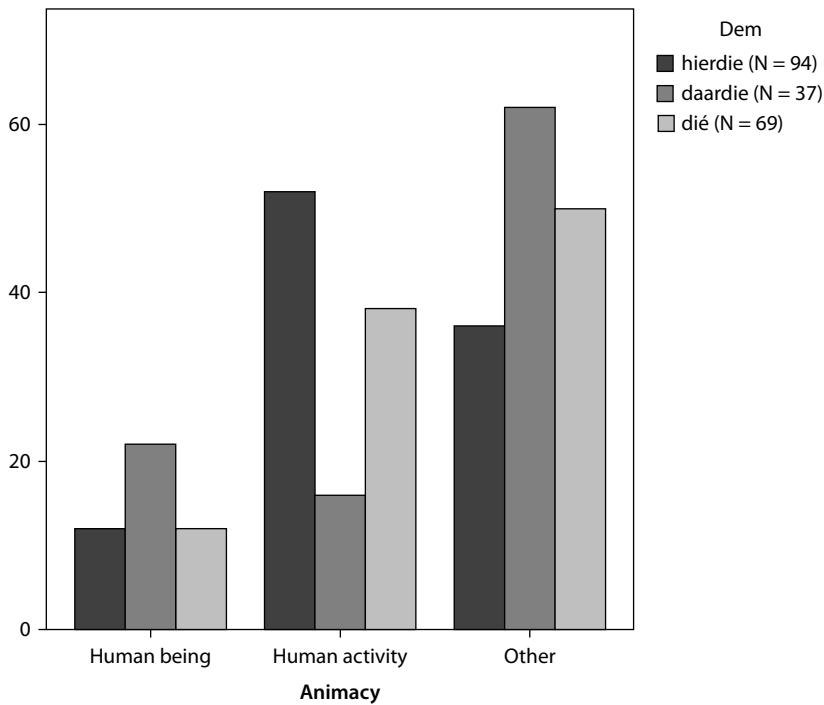


Figure 8. Skewing of demonstratives with human reference in Wessels 1994

We may observe that this ranking agrees with the claim of Table 1, above, that *hierdie* would refer to more important entities than *dié*, but it differs from it suggesting that use of *dié*, unspecified for location, confers *greater* importance upon the referent than use of the explicitly peripheral *daardie*. That is, the specific claim that the speaker considers the referent peripheral, not central, with its potential “negative” implications (the referent is somehow less crucial less, less important, not counting as much), might well outweigh the fact that, technically, *daardie* provides *more information* about the referent (pins down the location of the referent more clearly) than *dié* does, and it thereby implies that the referent is more important than it would otherwise be: cf. Diver (1987: 104 cited above). Of course the hypothesized measure of importance plotted in Figure 6, namely frequency of rephrasing versus frequency of literal repetition, is quite different from the measure (% human reference) used in Figure 8 and they might not necessarily run parallel. Clearly more data, more and different counts, are needed. One issue for further study raised here is that of the relative weighting in discourse of the *quantity* of information (how localized is the referent) versus the specific *type*



of information offered (central entity versus peripheral entity, hence potentially positive versus negative.)

### 5. Additional qualitative data

The contrast between the objective precision of *hierdie* and the emphasis communicated with *dié* has many consequences. Because *dié* simply urges the hearer to pay attention without specifying proximity, it is used when additional information is provided by a gesture or, in the case of text, by the very obvious presence of a representation of the referent. For example, on the cover of a magazine, where the articles inside are listed, enticing the viewer to buy the magazine containing them, we found the following example

- (18) Vermyn *dié* geldfoute. (Cover of *De Kat* September 1996)  
 'Avoid *these* money mistakes.'

The purpose of *dié* here is not to introduce specific kinds of money mistakes, carefully differentiated from other kinds, but to grab the reader, to get his attention. And at the beginning of the article, right before the article itself begins, we find – in large type – the text below:

HELP EK RAAK BANKROT!

Marléne Britz, belegginsredakteur van *Rapport*, ontvang weekliks briewe van lesers met geldprobleme wat vermy kon gewees het. In *dié* artikel kyk sy wat die algemeenste geldfoute is wat mense maak, en hoe dit vermy kan word.

(*De Kat* September 1996 p. 64–65)

HELP I'M GOING BANKRUPT!

Marléne Britz, investment editor of *Rapport*, receives every week letters from readers with money problems which could have been avoided. In *this* article she looks at what the most common money mistakes people make and how they can be avoided.

Native speakers confirm that *dié* could have been replaced by *hierdie*, but the tone would be more sober, less attention-getting.

A striking example of this use of *dié* occurs in a short story by Etienne Van Heerden. In the following passage, paratroopers are about to jump into the jungles of Angola:

Disselsade, heldedade. Binne die vliegtuig: die reuk van Afrika se wind is nie Etosha se modder of die swaar trope se reuk nie, dis nie die reuk van vars mis en gras en die vroeë oggende nie. *Dié reuk*, 'n mengsel van masjienolie, sweer, leer, skoepolitoer, kleres, tentseil, rubber, sperm, liggame, bloed en die skerp geur wat

'n mens in die hoogste angsts afsondering (angst nie as vrees nie, maar as hipergeredheid, adrenalien-angst), is Afrika s'n. Dit is die asem, die nuwe asem, van die kontinent...  
(Van Heerden 1983:98)

Thistle seeds, heroes' deeds. In the aircraft Africa's wind does not smell of Etosha's mud or the humid tropics, it does not smell of fresh dung and grass and early mornings. *This smell* – a blend of machine oil, sweat, leather, boot polish, clothing, canvas, rubber, sperm, bodies, blood, and the sharp stink of adrenaline – this is the new smell of Africa. It is the breath, the new breath of the continent.  
(Van Heerden 1986a: 246)

Our consultants agree that while *hierdie reuk* could have been used, it would greatly diminish the sense of drama.<sup>13</sup>

The opposite situation, where *hierdie* is judged more appropriate than *dié* is found in the preface to Opperman's collection of great Afrikaans poems. The very first sentence reads:

*Hierdie* bloemlesing wil die mooiste Afrikaans gedigte in een band saamvat, maar teglykertyd die gedigte so kies en rangskik dat dit enigsins 'n beeld van die ontwikkeling van ons poësie gee.

*'This anthology/The present anthology is intended to bring together the prettiest Afrikaans poems in one volume, but at the same time to so select and arrange the poems that it in some measure gives a picture of the development of our poetry.*

Native speakers indicate that while the reference would be the same, *Dié bloemlesing* would be somewhat dramatic. Or it could suggest that the physical book, rather than the text, is being presented. The difference with the money-management article is that the reader does not have to be actively enticed – with

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13. Note that in both the Afrikaans and the English translation, the description of the source of the smell *follows* the demonstrative. In her Dutch translation, it is interesting to observe that Riet de Jong-Goossens avoids the literal equivalent of *dié reuk*, namely *deze geur* or *die geur*. To achieve the same degree of emphasis as *dié reuk*, she fronts the descriptors and refers back to them with a stressed anaphoric *dát*:

...het is niet de geur van verse mest en gras en prille ochtenden. Een mengsel van machineolie, zweet, leer, schoensmeer, kleren, tentzeil, rubber, sperma, lichamen, bloed en de scherpe lucht die een mens afscheidt in zijn ultieme angst (geen angst als vrees, maar van hyperbereid zijn, adrenaline-angst), *dát* is Afrika's geur. Het is de adem, de nieuwe adem, van dit continent.  
Van Heerden (1992: 16)

...it is not the smell of fresh manure and grass and early mornings. A mixture of machine oil, sweat, leather, shoe polish, clothing, canvas, rubber, sperm, bodies, blood and the sharp air which one gives off in extreme anxiety (not anxiety from fear but from hyper-readiness, adrenaline-anxiety), *THAT* is Africa's smell. It is the breath, the new breath, of this continent.

advertising language – to read the anthology. He has already opened the book. The editor is simply laying out his purpose in putting it together; cf. our translation *the present anthology*.

The same contrast can be seen in the latest edition of the *Afrikaanse Woordelys en Spelreëls* (Taalcommissie 2002), the official list of Afrikaans spelling rules and word- spellings. The text on the back cover of the book – perhaps with the motive of enticing the reader to purchase it – begins with sentence (19a), with *dié*. The preface, on page 7, explaining why a new edition was necessary, begins with sentence (19b), with *hierdie*.

- (19) a. Dié nuwe uitgawe van die *Afrikaanse woordelys en spelreëls* is 'n volledige herbewerking van die 1991-uitgawe.  
'This new edition of the AWS is a complete revision of the 1991-edition.'
- b. Hierdie (negende) uitgawe van die *Afrikaanse woordelys en spelreëls* (AWS) verskyn slegs sowat 'n dekade na die agste, volledige hersiene uitgawe van 1991.  
'This (ninth) edition of the .....appears only about a decade after the eighth, completely revised edition of 1991.'

An example of the use of first *dié* and subsequently *hierdie* on the very same page and with the very same noun (as one “zeros in” on the referent) is found in a recent electronic letter by the Chairman of the Federation of Afrikaans Cultural Organizations F.A.K. (Goosen 2008). Prof. Goosen first asks the question: When may cultural or ethnic communities be considered to be “mature?” He states that there are two possible answers and that he himself prefers the second. He summarizes the first answer or point of view as asserting that cultural and ethnic communities are in fact primitive phenomena, relics from mankind’s early history, and exhibiting both discrimination and violence. As such, they cannot be considered “mature.” And then we encounter the following:

In post-apartheid Suid-Afrika het *dié standpunt* iets van 'n vanselfsprekende status verwerf. Enigeen wat dit (tot nog in die onlangse verlede?) sou waag om vir kultuur-gemeenskappe voorspraak te maak, word sonder meer met 'n verlange na apartheid en met rassistiese oogmerke geïdentifiseer.

Volgens *hierdie standpunt* kan ons slegs volwassenheid bereik indien ons anderkant ons onderskeie kultuurgemeenskappe tree. Nog beter geformuleer, daarvolgens kan ons eers volwasse wees wanneer ons onself as pure, ongebonde individue verstaan. Kortom, slegs die individu kan volwasse wees, gewis nie die gemeenskap nie.

In post-apartheid South Africa this [*dié*] point of view has attained something of the status of a truism. Anyone who (until the very recent past?) would dare

to support the idea of cultural communities would immediately be identified as nostalgic for apartheid and as showing racist characteristics.

According to this [*hierdie*] point of view, we can achieve maturity only when we move beyond our separate cultural communities. Formulated better, according to it we can only be mature when we view ourselves as nothing but individuals, unfettered individuals.

Finally, this contrast between an emphatic, almost physical pointing out with *dié* and a more cerebral, precise zeroing-in with *hierdie* is seen in the poetry of Breyten Breytenbach. We begin with *Hoe vaak was ons hier tussen koeltjes op die vloer* 'How drowsy we were wrapped in coolness'. The relevant lines (italics ours) are:

hoe vaak was ons hier tussen koeltes op die vloer  
 die reuk van terpentyn en van vuur  
 die doeke is wit want die oë is leeg  
 die afsydigheid van die nag  
 en die man 'n glimlag buite iewers  
 buite sig  
 die dae vergaan soos seisoene by die ruite  
 'n wolk, 'n gesig, reënblare, *dié gedig*  
 ek wou my afdruk op jou laat  
 ek wou jou brandmerk met die vuur  
 van alleen wees

how drowsy we were here wrapped in coolness on the floor  
 the smell of turpentine and fire  
 the fabrics white to our empty eyes  
 the indifference of the night  
 and the moon a smile somewhere outside  
 out of sight  
 days fall apart like seasons at the panes  
 a cloud, a face, leaves of rain, *this poem*,  
 I want to leave my print on you  
 I want to brand you with the fire  
 of solitude....

(Breytenbach 1978: 58–59)

We prepared two versions of the poem, one with the original phrase *dié gedig* 'this poem' and a second with *die gedig* replaced by *hierdie gedig* 'this poem.' One of our consultants, when confronted with both versions and not knowing which was the original, said that *dié* made the poem "graspable, almost a physical reference," while *hierdie* would have a softening effect.

Consider now a passage in Breytenbach's poem *In die middel van die nag* 'In the middle of the night' (Breytenbach 1984: 113–114). The persona is in prison,

in solitary confinement. He can hear the voices of prisoners who will soon be hanged. Suddenly he has a vision of a cavalry officer crossing a river. The poem continues (in Dennis Hirson's translation (Breytenbach 1985: 376)) "what Matinee Buffalo Bill is this out the blue/caught in which of memories' webs/(in front of a TV set and a fire while rain lacquers the tiles)/now (why?) dragged up/branded strangely to be shaken/onto the retina of the imagination/(while rain drips like dead blossoms onto the roof)." And then we encounter the lines (italics ours):

en net so *hierdie nie-verwagte onbeskaamde vreugde*  
 dat ek nog met alles aan jou kan dink  
 jy intiem met my is  
 in die groot bymekaarkom en sterwe van die besef

o my vrou

and so too *this unexpected shameless joy*  
 that I can think of you despite it all  
 you stay close to me  
 in the immense coupling and death of consciousness

o my wife

The same consultant (again confronted with two typed version of the poem) suggested that with *hierdie* "this unexpected shameless joy" is the persona's private, inner experience, not previously apparent to any hearer. The persona is, as it were, hugging it, caressing it, and not pointing to it "out there" the way the ongoing poem might be pointed to with *dié gedig* in the previous poem cited.<sup>14</sup>

## 6. Alternative analyses

The analysis presented and defended above in the previous sections is relatively conservative in that it groups *dié*, *hierdie*, and *daardie* – all traditional demonstratives – into one system and claims that unstressed *die* is a "traditional" definite article – i.e. part of a *different* system. Where it differs from tradition is that it

14. Further evidence, if needed, for the claim that *hierdie* is more appropriate than *dié* for referring to the speaker's own personal sphere is provided by the opening page of Brink's famous novel *Kennis van die Aand*, the first Afrikaans novel to be banned by the apartheid regime. The protagonist, Joseph Malan is in prison and knows that he will be executed. In contemplating his own body and body parts, he uses only *hierdie*. *Hierdie voete, bene, knieë, ... hierdie gesig onder my vingertoppe. Dit is myne.* (Brink 1982/1973:11). 'These feet and knees and .... this face modeled under my fingertips. This is mine.' (Brink 1975:7). The Brink example thus confirms what our consultant maintained about the second Breytenbach example above.

argues that *dié* is never synonymous with (a simple allomorph of) *hierdie*, as is sometimes claimed, and that when *dié* is used to communicate *messages* of “simple emphasis” or “paradigmatic excellence” associated in *English* with the stressed definite article *THE*, we are dealing with the very same *dié* which is used elsewhere to communicate “demonstrative” messages.

All this being said, it will still be instructive to briefly consider other possible – and more radical – analyses of the Afrikaans which have suggested themselves and which we have rejected. Our own conservative analysis will then be supported not only by fitting the data but by being demonstrably superior to several other potential analyses.<sup>15</sup>

### 6.1 Peeling off prosody but retaining DEIXIS

One possible alternative is suggested by the observation that, in addition to stressed *dié*, we very occasionally encounter stressed forms of *hierdie* and *daardie*. Consider the following example from an article by Elsabé Brit on the occasion of Susan Sontag’s death (emphasis ours, RSK):

’n Roman se struktuur beteken egter dat gekies moet word wat die belangrikste storie is. *Hierdie besluit* beteken dat stip aandag gegee word aan wat gebeur, en dit is *hiérdie aandag* wat ons kapasiteit vir morele besluite bepaal.

*Die Burger* 30|12|2004 (Website archive).

A novel’s structure means, however, that a choice has to be made as to what the most important story is. *This decision* means that careful attention is paid to what happens, and it is *THIS attention* which determines our capacity for moral decisions.

One is therefore tempted to analytically “peel off” prosody to arrive at the following system (where orthographic *die* replaces *dié* in our earlier system):

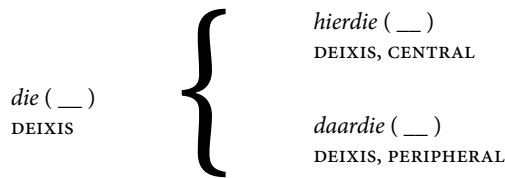


Figure 9. A demonstrative system independent of prosody

15. The structure of our argument is “A and B are incompatible” + “B is less credible” → “A is more credible”, as discussed in Polya (1954:25–6). That is, the various alternative analyses are incompatible first with each other and second with our own analysis. If we show the alternative analyses to be less credible, then we imply that our own analysis is more credible.

Note that here the sign *die* represents or “covers” its instantiation as both unstressed *die* and stressed *dié*, the sign *hierdie* represents its instantiation as both unstressed *hierdie* and stressed *hiérdie*, and the sign *daardie* represents its instantiation as both unstressed *daardie* and stressed *dáárdie*. In this system, the stress on *dié* is not part of its definition as a linguistic sign but is something extra added to it to draw additional attention to its meaning through the iconicity of extra loudness; cf. Rietveld & Van Heuven (2001: 244–247). The observation that stressed *dié* occurs far more frequently than stressed *hiérdie* or *dáárdie* (so that the system *appears* to be *hierdie*, *daardie*, *dié* as we proposed earlier) would be explained by appealing to the fact that *hierdie* and *daardie* are already perceptually “bulky” forms – more noticeable than unstressed *die* – because they are bisyllabic with stress on the first syllable: (HIERdie, DAARDie). Stressed *dié* (DIE) also would be perceptually bulky relative to *die* by being louder than *die*. But a stressed bisyllabic *hierdie* or *daardie*, that is *hiérdie* or *dáárdie* would be a doubly heavy, doubly marked form, a kind of overkill useful only in very specific situations.

Semantically, proposing this prosody-less system means that unstressed *die*, previously considered an article, would simply be an unstressed demonstrative. It could of course “serve the function” of a definite article and “fill the hole” in the (now) partial system formed by the indefinite article *'n* and zero. However, one obvious immediate problem with this analysis is that there would be no simple explanation for the fact that unstressed *die* does not appear used by itself as a third person pronoun, something which demonstratives – and especially unstressed demonstratives – are known to become (Diessel 1999: 119). One would have to invoke an argument that, since in pronominal use there is no noun around to indicate the referent, *die* needs to be made heavier by adding stress for it to be strong enough to bear the burden of reference all by itself.

## 6.2 Peeling off prosody and rejecting DEIXIS

Observe that we eventually run into the same problem with the “peel off prosody” approach if we consider *die* not an *unemphatic* form of *dié* but rather dispense with DEIXIS as the substance of the system altogether and “invert the analysis” – that is, consider *dié* as an *emphatic* form of the article *die*.<sup>16</sup> In this case, we could

16. In other words, we adapt to Afrikaans the second, Cognitive Grammar analysis of the Dutch demonstratives *deze* (*dit*) versus *die* (*dat*) in Kirsner (1993: 94–95) where the meaning of *deze* is the meaning of the definite article plus NEAR and the meaning of *die* is the meaning of the definite article + NOT-NEAR, without DEIXIS. The well-known “instructive force” of the demonstratives would then be attributed to the fact that its “semantic components” are

then merge demonstratives and articles into a single “supersystem” as shown in Figure 10 (diagrammed here for singular nouns only).

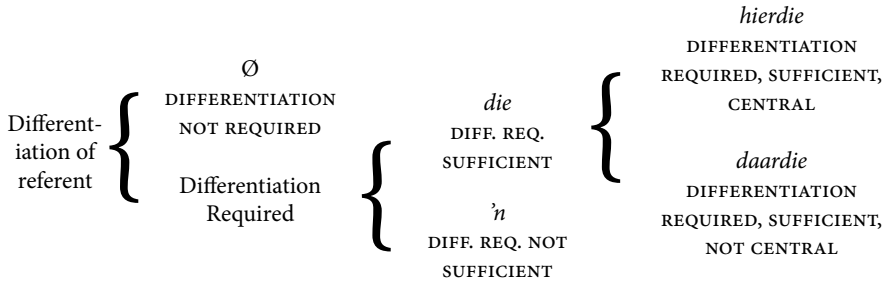


Figure 10. A “supersystem” of articles and demonstratives without explicitly deictic meanings

For the sake of exposition, we may introduce an analogy to *die* among the English pronouns. Consider that the English personal pronoun *he*, presumably indicating an identified single male, can be used, with stress, “as a demonstrative” to direct attention to *different* entities. It may be used to point to separate individuals, as in *HE didn’t do it but HE did!* (indicating separate two individuals). This contrasts with unstressed *he* in *He didn’t do it but he DID*, with stress on *did* but with unstressed personal pronouns. In this latter sentence, unstressed *he*, though used twice, indicates only one referent and is self-contradictory.<sup>17</sup> It would thus seem to be theoretically possible, by analogy, for a meaning like DIFFERENTIATION REQUIRED, SUFFICIENT for *die*, to be used, with stress, (like *he* above) to indicate that the intended identified referent is different from the “default” one which would be inferred if the form were *unstressed*. We could thus account for the “demonstrative” use of *dié* versus the “article” use of *die* seen in sentences (7 c,d) above, repeated below:

- c. *Dié* seun en *dié* seun het gister skool toe geloop.  
This boy and this boy walked to school yesterday.
- d. ??*Die* seun en *die* seun het gister skool toe geloop.  
The boy and the boy walked to school yesterday.

packaged within one single unit rather than separately: cf. *deze gebouwen* ‘these buildings’ versus *de gebouwen hier* ‘the buildings here.’

17. Compare also *John saw Pete but he/HE didn’t say “Hello”*, where *he* is taken as referring to the Participant in Focus (subject of the sentence), John, but *HE* is taken as referring to Pete. See further the remark on discussion of pitch accent on personal pronouns – referring to default and non-default identified entities – in Van Hoek (1997: 62–3).



Nevertheless, if the meaning of *die* indicates that the referent has already been differentiated from other potential referents, we still cannot account for the failure of unstressed *die* to be used by itself, i.e. pronominally. Its “article-like” meaning should permit this.

A further problem with the “demonstrative as stressed article” analysis is that evidence for the synchronic pragmatic mechanism we have proposed (relying on the analogy of *he* versus *HE*) seems to be available only if there is no separate “dedicated” demonstrative form already present in the language. In Dutch, for example, where in addition to the definite article *de* (allomorph *het* with neuter singular nouns), one has the demonstratives *deze* (*dit*) ‘this/these’ and *die* (*dat*) ‘that/those’, one does not create a new demonstrative simply by stressing the article. Assuming the “stressed article analysis for Afrikaans *dié*, the Dutch counterpart of the Afrikaans sentence *Dié seun en dié seun het gister skool toe geloop* would be, with the stressed article *dé*, \**Dé jongen en dé jongen zijn gisteren naar school gelopen* ‘THE boy and THE boy walked to school yesterday,’ which is, however, ungrammatical. In fact the only thing that the stressed Dutch article can communicate is ‘emphatic article’ or ‘paradigmatic excellence,’ as in *Hij was dé schrijver van z’n tijd*. ‘He was THE author of his time,’ in which the referent is not being picked out from a group of identical competing referents but is claimed to merit attention because of some unusual property or characteristic.

What this means, then, is that we have no way of deciding whether the “stressing” mechanism we have proposed is real, for our demonstration that you *could* derive a demonstrative message by emphasizing the meaning of a definite article depends on there not already being a dedicated demonstrative in the language which would already be communicating what one wanted to communicate with the stressed article. If our demonstration works only when “demonstrative” and “article” have precisely the same phonemic inventory (as in Afrikaans and, e.g. also with German *der*, *die*, *das*) and differ only with stress, we have no way to judge in what direction the *synchronic* pragmatic mechanism runs: from unstressed article via emphasis to demonstrative or from demonstrative to unstressed, weakened demonstrative to article. We must conclude that synchronically deriving demonstrative messages from an article-like meaning, which is of course the exact opposite of the known direction of linguistic change (from demonstrative to article), invokes a pragmatic mechanism *whose independent existence cannot be demonstrated*: cf. Diessel’s discussion (1999: 150–155) showing that demonstratives derive only from other demonstratives or other demonstratives reinforced by lexical items, and also Greenberg (1995).

Clearly, the best way out of both self-created dilemmas we have been discussing is to split article and demonstrative into two distinct synchronic signs, to assert that unstressed *die* is part of a signal *die*\_\_\_ (with obligatory accompanying lexical

material) and is thus an “article” as opposed to a demonstrative, which can be used both adjectivally and pronominally. This means that we *cannot* simply “peel off” prosody and run our analysis on one single *die* plus iconicity. Stressed *dié* must be considered a separate kind of entity than unstressed *die* and the stress is part of the definition of the signal.<sup>18</sup>

### 6.3 Keeping prosody but splitting adjective and pronoun

In earlier work (Kirsner 2001, 2002, 2007), influenced by our 1979 analysis of the Dutch demonstrative adjectives, we paid insufficient attention to the pronominal use of *hierdie* and *daardie*. Concentrating solely on their adjectival use, we proposed analyses in which, following our 1979 analysis of Dutch *deze* and *die*, the Afrikaans forms *dié* and *die* signaled HIGH DEIXIS versus LOW DEIXIS. Should one then identify the *-die* of *hierdie* and *daardie* with either *dié* or *die*? If so, which one? What would be the system?

Ponelis (1993) had argued that because the *-die* of *hierdie* and *daardie* was unstressed, it was perhaps better linked synchronically to the unstressed article *die* than to the stressed demonstrative *dié*. This led us to propose a system in which *dié* signaled HIGH DEIXIS, *die* LOW DEIXIS, and *hierdie* and *daardie* low DEIXIS, CENTRAL and LOW DEIXIS, PERIPHERAL, respectively. This seemed to account for the relative “sobriety” of *hierdie* (LOW DEIXIS) versus the relative vividness of *dié* (HIGH DEIXIS), but it had the disadvantage of ignoring various sorts of iconicity; it separated the morphologically “marked” forms (*hierdie*, *daardie*) from the phonetically “marked” form (*dié*), both relative to the unmarked form *die*. Our analysis was also too limited in that the pronominal use of demonstratives was there but we were ignoring it. *Hierdie*, *daardie* and *dié* all contrasted with *die* in being able to be used as pronouns, but we said nothing about this. Furthermore, the vividness of *dié* relative to *hierdie* and *daardie* could be accounted for just as well from the opposition of inclusion between *dié* and each of the other two forms as from the opposition between HIGH DEIXIS and LOW DEIXIS. On the other hand, if we were to group *hierdie*, *daardie*, and *dié* together as signaling HIGH DEIXIS and *die* as signaling LOW DEIXIS, we still would not account for the embarrassingly

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18. An analogy is perhaps the existence of matching stressed temporal adverbs and unstressed modal particles in Dutch, discussed in Elfers (1999), especially pages 152–4. Stressed *soms* in *Ontmoette je hem soms in de bioscoop?* ‘Did you meet him in the cinema from time to time’ contrasts with unstressed *soms* in *Ontmoette je hem soms in de bioscoop* ‘Did you happen to meet him in the cinema’? It would not seem possible to synchronically derive the “sometimes” sense of stressed *soms* by simply stressing the “accidental” or “perhaps” sense of unstressed *soms*.

absent pronominal use of *die*. The relatively traditional analysis we have proposed above in Section 3 is free of these flaws.

## 7. Theoretical considerations and conclusions

In this paper we have outlined and defended an analysis of the Afrikaans demonstratives and definite article in which all forms are treated as signal – meaning pairs or “signs.”; cf. Reid (2006). Each demonstrative signals the instructional meaning DEIXIS, urging the hearer to seek out and attend to some referent. In the case of *dié*, DEIXIS is the entire meaning signaled. In the case of *hierdie* and *daardie*, DEIXIS is augmented with a further specification that the referent is to be considered as either CENTRAL to or PERIPHERAL to the speaker. The unstressed definite article *die*, though historically deriving from a Middle Dutch demonstrative *die*, is here analyzed as a member of a separate system of meanings concerned not with the semantic substance Deixis but the semantic substance of Differentiation. To the extent that our analysis of the Afrikaans demonstratives is considered successful, it serves as a counterexample to Langacker’s earlier argument (1997) against instructional meanings. It is the fact that, unlike Dutch, Afrikaans has a genuine “unmarked” demonstrative *dié* which contrasts both with the unstressed article *die* and with the more specific demonstratives *hierdie* and *daardie* which allows us to claim that the basic semantic substance of the Afrikaans demonstrative system is indeed Deixis rather than the combination of definiteness+location, as was proposed in the second, Cognitive Grammar analysis of the Dutch demonstratives in Kirsner (1993:95–99).<sup>19</sup>

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19. In current formal approaches to linguistics, less attention is given to (a) precisely what deixis is semantically and to the possibility of there being entirely unmarked demonstratives (not indicating relative location) than to (b) the task of *representing* the difference between demonstrative and article in terms of specifiers becoming heads and interpretable features becoming uninterpretable features. Van Gelderen (2007), working within the Minimalist framework of Generative Grammar, briefly discusses two of the three Afrikaans demonstratives but does not spell out for the reader what the difference would be between the syntactic representations of the Afrikaans unmarked but stressed demonstrative *dié* and the Afrikaans unstressed definite article *die*. In fact, she seems to not allow for the possibility of Afrikaans *dié*. Her schema (43) outlines a process of Feature Economy in which a demonstrative is a head and contains the feature sets [iLoc][uPhi] which evolves into a definite article which is a head and contains only the feature set [uPhi]. But if *dié* is “unmarked” as we have argued, it would seem that both *dié* and *die* would be represented as [uPhi], which in our view misses a crucial distinction.

We have also examined and rejected other possible analyses. In some the stress on *dié* was regarded not as part of the conventionalized sign *dié* but as a separate linguistic “layer,” drawing attention to an undifferentiated *die* (a combination demonstrative-article) through the iconicity of extra loudness. One possibility considered was that of even dispensing with DEIXIS as a meaning and positing one single, expanded “supersystem” of Differentiation encompassing both traditional articles and traditional demonstratives. In that analysis, stressed *dié* would simply signal DIFFERENTIATION REQUIRED, SUFFICIENT, but more loudly and more emphatically than unstressed *die*. Finally, we examined an earlier analysis of our own which made use of scalar instructional meanings (now abandoned by García and Gorup), namely HIGH DEIXIS and LOW DEIXIS. This analysis failed not because it used instructional meanings but because it accounted for only a subset of observed demonstrative use and, upon scrutiny, did not do so coherently.

It should be noted that while we may have rejected the notion of iconicity as an independent causal factor in the synchronic grammatical systems we have postulated, we have not abandoned iconicity as a crucial component of language. The arbitrary signs we have postulated still reflect iconicity in both their definitions and their use. It certainly would be strange if Afrikaans were to have an *unstressed* demonstrative *die* and a *stressed* article *dié* rather than the reverse. Even though in Sections 6.1 and 6.2 we ultimately could not postulate one single *die* which could be either stressed (emphatic) or unstressed (unemphatic), we observe that the iconicity of loudness is built into the definition of the form of the “morphological chunk” *dié* as signaling DEIXIS. And of course the relatively high frequency of stressed *dié* versus the relatively low frequency of stressed *hiérdie* and *dáárdie* can be explained by the iconicity of the relative lightness or heaviness, bulkiness of the forms in question.

In retrospect, it would seem that the original objection to instructional meanings stems from the common but erroneous assumption that a necessary property of demonstratives is that they specify location with respect to the speaker and that any demonstrative which did not do this would be indistinct from a definite article. But Diessel (1999, 2006) shows that this assumption is empirically false and cites research showing that even such familiar languages as Modern German and Modern Turkish have forms (*dies*, *şu*) which are undeniably demonstratives but which do not specify relative location. He furthermore argues convincingly for a different conception of demonstratives which is exquisitely compatible with the Columbia School DEIXIS meaning, namely that they “function to coordinate the interlocutors’ joint focus of attention.” That is exactly what the speaker’s instruction to the hearer to seek out and attend to the referent would be expected to do. The only analytical alternative to positing Deixis (or something like it, non-locative) is to consider demonstratives as semantically so basic that the

meaning they signal can only be felt and not described: cf. Wierzbicka's postulation (1980:10,27,37; 1996:42–43) of THIS as an indefinable, semantic primitive term that cannot itself be defined by any simpler concepts.

As a concluding remark, it is interesting to note that in Langacker's recent textbook (2008), in which he puts forward the concept of an abstract "discourse space" which is continually being updated when people are speaking to one another, he accepts and expands Diessel's view of "co-ordinated mental reference" to cover not only demonstratives but many other "grounding elements." As for the demonstratives, he appears to have moved beyond the "platform metaphor" used in his (1997) article and now adopts the instructional view presented in Kirsner (1993); cf. Langacker (2008:281–284).<sup>20</sup>

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20. A remark is in order here for those interested in the possibility of communication between those schools of linguistics which share at least some basic assumptions, such as the Columbia School and Cognitive Grammar: cf. Kirsner (1993:81–82). Figures 9.7 through 9.11 in Langacker (2008:282–285), incorporating a rich conceptual apparatus and intended to represent successive updatings in time of the discourse space, may be viewed from a Columbia School perspective as illustrating graphically how demonstratives "instruct," i.e. the process of speaker and hearer zeroing in on a referent. An analogous instance of a partial translation of a Columbia School analysis into a Cognitive Grammar framework is seen in Cornelis's use (1996,1997) of Kirsner's analysis of the Dutch passive (1976a,b) as backgrounding a high contributor (or relatively agent-like entity) in contrast to the foregrounding of a low contributor or (relatively "object-like" entity), as participant in focus or "grammatical subject" seen in the English passive.

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# Focus system of the Japanese benefactive auxiliaries *kureru* and *morau*

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This paper provides a novel analysis of two benefactive auxiliaries in Japanese, *kureru* and *morau*, arguing that the difference between them is agent focus vs. agent defocus. The analysis of collected data reveals the shortcomings of previous grammatical accounts that posit that a speaker's selection of auxiliaries is based on whether or not the speaker has requested a favor. However, our data indicate that the presence/absence of a request for a favor has little to do with word choice. Instead the degree to which the speaker wishes to draw attention to either the favor or the agent providing it determines the choice of one benefactive auxiliary form over the other.

## 1. Introduction

This paper is a case study of the grammatical system of the Japanese benefactive auxiliaries, specifically *kureru* and *morau*. Both auxiliaries are understood as receiving auxiliaries in the bigger scope of the giving/receiving system. The words are quite commonly translated into English, *kureru* as 'somebody does me a favor' and *morau* as 'I have somebody do me a favor.' These translations may suggest the semantic opposition between the forms is generally described in terms of the subject of the sentence. *Morau* is typically associated with the causative sense, which is generally acknowledged as the characteristic feature of the word (e.g. Sakuma 1936; Yoshida 1971; Nitta 1985). However, Okutsu & Jo (1982: 98) deny this and instead claim that the polite causative sense or request is not lexical content inherently encoded in *morau*. Instead, they posit that *morau*'s meaning is to simply describe the gaining of a favour.

As for the validity of the causative interpretation Yamada (2004: 129) reports that many instances of *morau* show analytical ambiguity. Even more, he remarks that the majority of the instances can be classified into any of three different categories; namely, *irai-teki* 'request like'; *kyoyou-teki* 'pardonable'; *tanjun-juei-teki* 'simply passive.' Although Yamada does not overtly disclaim the prevailing interpretation that *morau* in certain contexts carries a polite causative meaning,

his remark on the “analytical ambiguity” of the word is a manifestation of the inaccuracy of the interpretation. Nonetheless, the use of *kureru* and *morau* is often considered interchangeable (e.g. Horiguchi 1987:67). As for the notion of interchangeability, Benveniste states, “The claim that the distinction exists but that it is not verbalized would demonstrate the insensitivity to contradiction not in the language but in the researcher, for it is indeed contradictoriness to impute to a language both a knowledge of two notions as opposite and the expression of these notion as identical.” (1997 [1966]:71)

In this research we investigated the actual use of the auxiliaries to postulate a grammatical model that represents the real grammar practiced by speakers. Analysis of data comprised of approximately 1,300 instances of the two auxiliaries guided us to conclude that the empirical knowledge of the origin of the act of kindness is undoubtedly not the basis of using the auxiliary. The data exhibit a collocation of *kureru* and the agent, whereas *morau* does not regularly appear with the agent. This clear asymmetry in agent collocation indicates the speakers’ different degree of foci on the agent of the kind deed. That is, the word-selection of *kureru* over *morau* and vice versa is based on the speaker intentionally using the most effectual form in the context. The speaker’s plan/design of organizing the discourse includes syntactic factors. For instance, if the speaker thinks introducing the favor is more interesting or important than introducing the agent, then he may wish to draw more focus on the favor. If the speaker wishes to avoid repeatedly mentioning the agent within a single context, then he may opt to not focus on the agent. The speaker’s decision of how overtly the agent is introduced is independent from empirical knowledge, such as who initiated the occurrence of the beneficial event for the speaker.

This matter has never been discussed in the field of Japanese Linguistics. The theoretical premise employed here centers a speaker in linguistic communication, telling a story of one’s own beneficial experience. The purpose of this paper is twofold. First, the paper attempts to prove that neither the cognitive pattern, such as *hatarakikakesei* ‘speaker’s intentional action to get the agent’s help’ claimed by Sakuma (1936), nor the empathy hypothesis posited by Kuno (1978) can be the discerning basis of the meaning of the auxiliaries. Second, the paper provides a new alternative grammatical account that should comprehensively and coherently explain all uses of the auxiliaries in a way that no previous account has hitherto been able to do.

## 2. Previous studies

The common way previous researchers have explained the meanings of the expressions is by associating the speaker’s active/inactive involvement in doing a favor for someone. Hence, *morau* is typically described as implying that the speaker is

actively involved in the materialization of getting help after asking for it. Matsushita (1961 [1928]) postulates a semantic opposition between *kureru* and *morau*. The opposition is essentially based on the situational condition that identifies who is the true initiator of the event. The theory attracted grammarians, Sakuma (1936), Yoshida (1971), and Nitta (1985) in particular note that the auxiliary, *morau* carries the speaker's request and polite causative sense. However, as mentioned earlier Okutsu & Jo (1982: 98) point out the theoretical inadequacy of the interpretation. They state that the polite causative sense or request is not lexical content inherently encoded in the auxiliary; instead the meaning is to simply describe the gaining of a favor.

Nevertheless, the polite causative interpretation is popular among grammarians. For instance, Tomita (2007: 168) notes that *morau* is usually translated into English as a causative sentence, i.e. someone had someone else do something for him. Johnson (2008: 287) similarly writes that the auxiliary carries a connotation that someone asked someone to do something and s/he did so. The grammar book *Nihongo Bunpo Handbook* (2001: 121) states, "While *morau* sometimes has a causative meaning based on the speaker's request, *kureru* does not have this implication. So, if a speaker wants to express thankfulness the use of *kureru* is appropriate." But in another volume of the book states, "*Morau* gives a somewhat more polite impression than *kureru*" (2000: 113). These conflicting grammatical accounts appearing in different volumes of the same book demonstrate the difficulty in providing a clear understanding of the auxiliaries.

It is popular to associate the speaker's active involvement and positive impact on the agent with the materialization of an event. However, numerous instances found in the data indicate that to construe the meaning of the two auxiliaries by relying on the conceptions of voice, politeness, causative sense, thankfulness, empathy, transfer-direction and the speaker's stance (Teramura 1982) is inadequate in explaining the mechanism of form-selection. According to the empathy theory, however, both *kureru* and *morau* sentences specify that the speaker's empathy is on the receiver's side (Kuno *ibid*: 141 & 163). Thus the empathy theory makes no distinction between the two forms.

The data also uncovered that the terms that explicitly express the speaker's thankfulness toward the help, e.g. *arigatai* 'I am grateful' appear with both *kureru* and *morau*. The arithmetical result indicates that the appreciation modality does not have solid arithmetical evidence.

## 2.1 The speaker's intentional action to get the agent's help

Matsushita's attempt of associating the linguistic notion of voice to the giving/receiving system in modern Japanese (1928: 395ff) was the predecessor of elucidating the grammatical systems. What is actually questioned in the model is whether the

agent of the favor takes action voluntarily. If the speaker considers that the agent takes action when solicited by the speaker, then he uses *morau* because it expresses *jikou* ‘the speaker’s own deed.’ The theory, however, does not explain the use of *kure* in a command. Numerous instances found in the data of this study also question the aptness for the self vs. the other dichotomy to the system.

Following Matsushita’s perspectives of Other-Self, Sakuma (1936) considers that *morau* bears the speaker’s active involvement in gaining a favor. He terms the speaker’s attempt as *hatarakikake-sei* ‘speaker’s intentional action to get the agent’s help,’ discerning the meaning from *kureru*. However, the meaning is by no means monopolized by *morau*. In fact, some times *kureru* is used with an explicit request term such as *irai* ‘request.’ Quite a few instances containing such terms in a *kureru* sentence are found in the data. Example 1 is typical of such sentences. (The explicit request terms are underscored and superscripted by Riggs. The term K-BEN, appearing in both the gloss and the English translation, refers to the beneficial event marked by *kureru*.)

- (1) *Wagaya no tsuushinkiki ga chooshiwarukunatta node, A-naru tokoro e shuri o tanonda<sup>1</sup>. Futarigumi no otokotachi ga kite-kure-te, naorimashita to iu. Shikashi yahari guaiwarui node saido iraisuru<sup>2</sup> to, mata futarigumi de kite, shuuri kanryo toiu. Soredemo naotte-inai. Shikatanaku B-sha ni tanomu<sup>3</sup> to, sugu hitori no otoko ga yattekite, tachidokoroni naoshite-kure-ta. Watashi wa omowazu sakende-shimau. <Maa arigato. A no hito-tachi-tte, munoo nee!>*  
[Rakurosho: 23]

Our house GEN fax machine NOM out of order therefore A-company at repair ACC asked<sup>1</sup> in pairs men NOM came-K-BEN fixed QT said but still bad therefore second time requested<sup>2</sup> then again 2 men came repair completed QT said even so fixed-NEG inescapably B-company DAT requested<sup>3</sup> then soon a man NOM came over immediately fix-K-BEN-PST ‘I’ TOP spontaneously shouted < INJ thanks A’s man-PLU-DIM incompetent EXC > ‘Since the fax machine at home was out of order, I asked for<sup>1</sup> repair service A to come out. **Two men came** K-BEN. They soon said that they were finished, but it was still as bad as before so I **again requested**<sup>2</sup> repair service A to come out. Two men again arrived and alleged that they completed the work. But the problem was same as before. I **requested**<sup>3</sup> repair service B (to look at the fax machine). A man came out and instantly fixed K-BEN the fax machine. I could not help saying loudly, “Wow, thank you very much! A’s repairmen are so incompetent!”

The significance of this instance is the co-appearance of the request terms and *kureru*. In such an instance it is not possible for *kureru* to denote the agent’s voluntary action.

These co-occurrences of *kureru* and request terms undermine the *hatarakikakesei* theory. As Okutsu and Jo have already stated in their paper (Okutsu & Jo

1982) the sense of speaker's request (*hatarakikakesei* in Japanese nomenclature) is not the semantic feature of *morau*. Supporting this claim, we argue that the use of *kureru* is a manifestation of discourse salience that is deliberately designed by the speaker/writer.

In this excerpt, the essayist introduces three events about having five repairmen fix her broken fax machine. First use of a benefactive auxiliary is the arrival of two repairmen. The event, *futarigumi no otokotachi ga kite-kurete* 'men in a pair came K-BEN' is understandably a benefactive event for the speaker. Similarly, she also uses *kureru* to introduce the fact that company B's repairman fixed the problem. The diminishing term "*tte*" shows her contempt toward A's repairmen. The speaker depicts a clear contrast between the four useless men and the one skilled man. The connotation drawn from this instance is the focus function of *kureru* onto the first two agents (company A's workers) and the agent (company B's worker) who could actually resolve the problem.

*Kureru* in Example 2 below and *morau* in Example 3 appear in relative clauses that equally modify the same referent, Mrs. U. These uses further question the common belief that only *morau* indicates the speaker's *hatarakikakesei* 'speaker's intentional action to get the agent's help'. In both excerpts the auxiliaries are used in the relative clause modifying an identical referent, the housekeeper. The writer in both contexts hires Mrs. U, yet the referent is marked by *kureru* in Example 2a and *morau* in Example 2b.

- (2) a. *Byooin e tsumete-kurete-iru kaseifukai*  
 Hospital LOC attend-BEN-be housekeeper agency  
*no U-fujin ...*  
 GEN Mrs. U  
 'Mrs. U, who is a housekeeper, is sitting up (with my husband) K-BEN  
 in the hospital...' [Zankatei: 85]
- b. *Yoru no aidajuu papa o mite-moratte-iru U-san ...*  
 Night GEN during papa ACC watch-BEN-be Mrs. U  
 'Mrs. U is sitting up M-BEN with my husband all  
 night long...' [Zankatei: 81]

These excerpts are found in an essay book. They are relative clauses in which Mrs. U is the head noun in both modifying clauses. As Example 2a shows the referent is a housekeeper who was dispatched to the hospital where the writer's husband is hospitalized. The writer uses both *kureru* and *morau* to introduce the referent indicating what she is. It is clear that Mrs. U is working for the writer on a contract basis made between the housekeeping agencies, to which Mrs. U belongs, and the writer. It means that the woman works for her based on the writer's request. Under this single circumstance, the writer yet introduces her by *kureru* in Example 2b.

The popular assumption that only assigns *morau* the speaker's *hatarakikakesei* 'speaker's intentional action to get the agent's help' cannot explain this.

## 2.2 The rationality of politeness interpretation

Paying close attention to the interchangeable characteristics between *moraeru* and *kureru*, Yamamoto (2002:268) notes that the use of *kureru* is more appropriate than *morau* when the speaker makes a plea for the giver's agentive action. She attributes the reason to the elimination of the homonymic meanings of *kureru*. The significance here is the demonstrated conflict in the opposite interpretations among the researcher in defining which expression conveys the polite sense. Example 3 proves neither contention is correct.

- (3) *Suna-yu de, koko no furumekashii, ookina mokuzoo no tatemono e haitte, 150en harau to, atataakai suna no naka e ikiumenishite mora-eru. Kuroi suna no, yuge no tatta yatsu o, yu-na naranu suna-baa ga, sukoppu de tan'nen'ni, shinsetsuni kakete-kureru.*

Sand-bath is here GEN antiquated big wooden GEN building LOC enter  
150-yen pay and worm sands GEN in LOC buried alive BEN-can black sands  
GEN steam GEN rise one ACC bath-attendant not sand-old woman NOM  
scoop INS carefully gently put BEN

'It is a mud bath. When we walk in the big antiquated wooden building and  
pay ¥150, we can be buried alive M-BEN in warm sand. An old attendant  
lady uses a scoop to gently and carefully lay K-BEN steaming hot black sand  
over our bodies [Zoku Yutara nanya kedo: 120]

This excerpt is comprised of two sentences containing *morau* and *kureru*, yet the two individual expressions refer to a single event. In the first sentence the writer simply introduces a pleasing experience available at the sand-bath house. Their guests are thoroughly covered with hot sand. The writer puts the element "who lays the sand" out of the picture. She focuses on the pleasant event in the description of benefit. In the second sentence, in contrast, she introduces an old female attendant, who meticulously covers up the customers' bodies in steaming hot sand over customers. The sentences may appear to be repetitions of the same beneficial event, but in actuality the first expression, i.e. *mora-eru*, focuses on the customers' beneficial event per se, whereas the second expression, i.e. *kureru*, focuses on the agent. The sentence gives more detailed information of the worker (i.e. the agent) engaging in the beneficial event for the customers. We posit that the writer makes use of the meaning/function of *kureru* to guide the reader's attention to the agent.

Regarding the transposition of the two forms Horiguchi (1987:59) notes, "because of the semantic differences between *kureru* and *morau*, i.e. the former is a giving verb and the latter is a receiving verb, the two verbs depict an identical event in the way that a mirror reflects the images of an object in a reverse way."

Horiguchi claims that *kureru* and *morau* express “speaker’s certainty-mood” and the “speaker’s will” respectively. The behaviors of *moraeru* and *kureru* in Example 4 uncover the analytical inaccuracy of the quoted observation above. Let us make the point clearly. The two expressions are by no means merely depicting an identical event in reversed ways. Instead, each expression has complementarily distinctive functions, specifically agent focus and defocus functions, respectively as demonstrated in this excerpt.

### 2.3 Common feature in *morau*, passive, and causative

Masuoka (1981) discusses two types of *morau*; namely, “passive type” in which the speaker’s role is passive and “causative type” in which the speaker’s involvement is noticeably perceived. Thus he considers that the relationship between passive type *morau* in particular and the passive construction parallels that of the causative type *morau* and the causative construction. In his later work (2001: 28) Masuoka develops the idea into a Unfavourable vs. Favourable dichotomy and associates it to the relationship between the passive voice construction and the *morau* benefactive construction. In his hypothesis, the passive voice represents the adversative nature of the event, and only “passive-type” *morau* (but not the “causative-type”) conveys the speaker’s thanks.

As noted earlier, Yamada (2004: 129) subdivides *morau*’s meaning into three categories: request like; pardonable; and simply passive. He recognizes that the meaning of *morau* in any specific context is based on both grammatical and pragmatic factors. He further notes that many uses of the word show analytical ambiguity, remarking that “the majority of the instances can be classified into any of the three categories.” If such ambiguity in fact exists, then it is rather pointless to divide *morau*’s meanings into three categories in the first place. It means that the aforementioned unfavourable/favourable opposition does not have a basis in the first place. Granted that Masuoka’s claim is correct, then *morau* should be used in the third event in Example 4, i.e. the speaker was dressed in a fancy kimono.

- (4) *Oosaka-juu ga machikogareru 7 gatsu 25 nichi no tenjin matsuri dearu. Kono hi wa oosaka-juu no <tenjin-san> no matsuri demo atta. Watashi wa chikakuno kamifukushima no tenjin-san e omairi shinakerebaikenai. Yuugata, hi mo akarui uchini furo e ire-rare, asemoyoke no tenkafun o hatak-arete masshiro ninari, ro no hanagara no furisode o kiser-areru. Mizuirono 3-jaku o shimete, kuronuri no kodomo-geta o narashinagara ochoboguchi o shite, shanari shanari to aruku. ....Kon chiki chin no ohayshi to tomoni, on’nanoko ni umarete yokatta, to iu hokorashii kokorohazumi o, imamo oboeteiru.*  
 Oosaka-whole NOM longing for July 25 of Tenjin-festival COP this  
 day TOP Oosaka-whole in Tenjin Shrine of festival also was I TOP nearby



Kamifukushima in Tenjin Shrine to worship at must evening sun is bright  
 within bath in put-PAS heart rash of talcum powder powder-PAS white  
 become silk gauze of flowery pattern long sleeve kimono ACC dress-PAS  
 light blue sash ACC tie black lacquered ACC make noise pucker up one's lips  
 ONO walk kon-chiki-chin rhythm with girl was born QT proud feeling ACC  
 now P remember

‘(That) is Tenjin festival on July 25 for which all dwellers of Oosaka are  
 longing very badly. This day was also designated as the festival of all Tenjin  
 shrines in the city. I must worship at the local Tenjin shrine nearby in  
 Fukushima. In the early evening while the sun is still bright, I **was urged**  
 to take a bath, heavily **powdered** myself with talcum powder to avoid  
 getting a heat rash, and **dressed** in a long sleeved kimono with a floral  
 design, made of fine silk gauze. I walked primly in a pair of black-lacquered  
 wood flip-flops, wearing a baby blue silk sash over the kimono, and puckered  
 my lips. .... I still remember having the proud and happy feeling of being  
 born as a girl.’

[Rakurosho: 131]

This excerpt is comprised of two syntactically distinctive parts. The gloss may suggest that there are three passive expressions, namely, *ire-rare*, *hatak-are*, and *kiser-areru*. The period after *kiser-areru* marks the end of the first part. In other words, the use of passive implies that the agent(s) of these three deeds is (or are) someone else besides the speaker. On the contrary, however, it is the speaker who is the agent of the deeds such as *mizuiro no 3-jaku o shimete*, *kuronuri no kodomogeta o narashinagara ochoboguchi o shite*, *shanari shanari to aruku* ‘I walked primly in a pair of black-lacquered wood flip-flops, wearing a baby blue silk sash over the kimono, and puckered my lips.’ She is also the subject of remembering all of the childhood memory. In the last sentence she states her contentment at being born a girl.

Needless to say, the third deed, i.e. being dressed in a fancy kimono by somebody in the household, is definitely a favor to the girl (e.g. the speaker in her recollection). The statement, *on'nanoko ni umarete yokatta, to iu hokorashii kokorohazumi* ‘the proud and happy feeling of being born as a girl’ is a manifestation of her very positive memory of the series of gained helps. Thus, it is completely illogical to read the passive part, *ro no hanagara no furisode o kiser-areru* ‘being dressed in a long sleeved kimono with a floral design, made of fine silk gauze’ as an annoying event the speaker is experiencing. The instance reveals the analytical inaccuracy of the interpretation, i.e. passive connotes annoyance.

Example 5 is another instance of using passive in a benefactive context.

- (5) *Niichan wa wagaya de shokuji o furum-aware, amai kashi mo tabe,*  
*genkiyoku, arigatougozaimashita! to kyoshu no rei o shite kaetta.*  
 < *Kiitsuketena, karada, daijini shinasaiyo... > to haha wa itsumo wakare no*

*toki, kore ga saigo no yoni, koe o furishibotte mukashi kara kawaigatta oi o okuridasu no data.*

Big cousin TOP our house at meal ACC treat-PAS sweets too eat lively thank you very much! QT salute ACC do and went back < be cautious health take care ... > QT mom TOP always at parting this SBJ farewell as if voice ACC strain for long cherished nephew ACC see off NOML COP

'My big cousin was treated to a meal and sweets, and as he left he vigorously said, "Thank you very much!" while he saluted. Whenever he parted from our house, my mother saw off her much-loved nephew saying, "Take well care of yourself" in a strained voice, as if that would be the final farewell.'

In the first sentence of this excerpt, even though the event, *shokuji o furum-aware* 'was treated to a meal', is definitely beneficial to the referent the writer uses the passive. Thus, the reason of the use of the passive in the particular context cannot due to the speaker's favorable/unfavorable modality. In order to explain this use in this excerpt, we need to evoke the agent defocus function of passives (cf. Kirsner 1977) and the empathy hypothesis (cf. Kuno 1994). Since *morau* (as well as *kureru*) denotes that the speaker's empathy is on the beneficiary's side, the use of a benefactive auxiliary is pragmatically not possible. That is, if the writer uses *morau*, then it would sound as if she had a closer relationship to the cousin than to her own mother, who treated him to a meal. Hence, the use of *morau* is not an option even though the event by itself is certainly a favorable thing. The favorable (benefactive aux)/unfavorable (passive) hypothesis neglects this pragmatic constraint.

Next, we examine an instance of the simultaneous use of a passive and *morau* in a single sentence.

- (6) *Watashi wa jibun no ketsuatsu ga ikutsu na-no-ka shiranai. Ketsuatsu, koresutorooru wa nan-nen ka mae, futo tachiyotta iin de, tsuideni hakari-mashoo to iw-arete hakatte-moratta ga (sono iin ni tachiyotta no wa, sore o hakaru no ga mokuteki dewa nakatta kara), suguni wasureteshimatta.*  
[Oijikara: 151]

I TOP self GEN blood pressure NOM what be-GEN-Q know-NEG blood pressure cholesterol TOP a few years ago spontaneously drop in medical clinic at ADV measure-VOL QT say-PAS measure-BEN but (the clinic at drop in NOML TOP that ACC measure NOML NOM purpose be-NEG because) soon forgot  
'I don't know what my blood pressure levels are. As for blood pressure and cholesterol level, on the occasion when I suddenly dropped by a medical clinic a few years ago, (the physician) proposed measuring my blood pressure M-BEN and cholesterol levels. But I immediately forgot the numbers (because the purpose of visiting the clinic was not to do that).'

This excerpt is comprised of two sentences. In the second sentence, the passive voice phrase *iw-arete* 'I was told' and the benefactive phrase *hakatte-moratta* 'took my blood pressure' appear right next to each other. Masuoka's theory would

require us to interpret the writer's use of the passive as meaning that she found the taking of her blood pressure to be a nuisance, while her use of *morau* would mean she is expressing her thankfulness at the benefit of having her blood pressure taken. This is clearly self-contradictory and, as such, provides another example that weakens Masuoka's claim that passives and *morau* expressions are opposed to each other in terms of the speakers' modalities.

On the other hand, in the proposed model that will be introduced in Section 3, the use of the passive and *morau* together makes complete sense. The writer states that the information of her blood pressure and cholesterol levels is entirely meaningless to her. Hence, the identity of the person who measured the levels is extremely unimportant. For this reason the writer's use of the AGENT DEFOCUS auxiliary makes perfect sense.

In Examples 7 and 8, an identical agent gives two kinds of help. The first help is introduced by *kureru* and the second help is marked by *morau*. The account that *morau* decodes the speaker's intentional action to get the agent's help cannot explain the uses, however the proposed model can. Let's take a look at the following examples paying attention to this matter.

- (7) *Kaketsukete-kureta chikaku no isha ni hakatte-moratte 200 to 120.*  
 rushed to-BEN neighbourhood in doctor by measure-BEN 200 and 120  
 [Fuufu de 62 nen: 78]  
 'A practitioner in our neighbourhood rushed K-BEN to our place, and took  
 M-BEN my blood pressure. It was 200 over 120.'

It is clear that the doctor hastily visited the writer's house because he received a request for a house call. Then, there is no situational difference between it and the other event, i.e. the doctor taking the speaker's blood pressure. Furthermore, in the adjacent statements there is no explicit word which indicates that anyone requested the blood pressure of the patient to be taken.

- (8) *Ima no shiteiseki ni ataruyouna 2kaiseki toiuno ga atte, 2kaiseki ni wa  
 kaichudentou o motta an'nainin ga an'nai shite-kureta no da ga, hatsue-  
 san-tachi wa kaomishiri nanode itsumo iiseki ni an'naishite-moratta.*  
 [Ano hito ga ita Tokyo no machi: 163]  
 nowadays reserved seat of equivalent 2nd floor-seat called SBJ were  
 2nd floor seat to flashlight ACC hold usher escort-BEN NOML COP CONJ  
 name PLR TOP familiar so always nice seat to guide-BEN  
 'In the movie theatre, there was a special section called upstairs seating  
 that is the equivalent of today's reserved seating. Back then the usher  
 escorted K-BEN customers upstairs guiding them with a flashlight. Since  
 Hatsue and her aunt were familiar to the usher, they were always guided  
 M-BEN to nice seats.'

This excerpt introduces the practice of ushers guiding patrons to special seating at the upscale movie theaters in 1930s Tokyo. The usher in this example did not voluntarily escort any customers upstairs. Instead, she escorted (K-BEN) only guests who had purchased tickets for the special seats. On the other hand, the same usher voluntarily gave nice seats (M-BEN) to the referents because they were good clients. The gain (i.e. the usher escorting guests to their seats) in the first event is a kind of assumed help, whereas the second help (the usher guiding guests to special seats they did not in fact pay for) depends entirely on the usher's goodwill. Nevertheless, the writer introduced the first event with *kureru*. The writer may wish to draw readers' attention to the usher's job that does not exist nowadays. On the contrary, in the second event, she may plan to draw readers' attention to the benefit per se.

So far in this section we closely examined the behavior of the auxiliaries. The instances refute the common assumption that *kureru* depicts the agent of the kind deed does so solely based on his own will, and passive voice constructions do not represent the speaker's negative and adversative assessment toward the event (i.e. Unfavorable/Favorable modality claimed by Masuoka 2001). Consequently, we cannot assume that the presence of the speaker's request decides his/her word choice. Yamada (2004: 123) addresses the co-occurrence of *morau* and modality expressions, such as command and speaker's own volition. Quoting Nitta (1991), he states that the request type *morau*, that is, the agent taking action based upon the speaker's request, possibly co-occurs with expressions that carry the speaker's own command or volition. (Shown in Example 10.) Examples 9 and 10 are instances of the auxiliaries to give a command to his addressee.

- (9) *Anonaa, kawano. Hattemo ee kedo, anmari beta~tto hara-n-toite-kure-yaa.*  
*Man'naka itten dakeni tanomu-wa. Atode hagasutoki nangi yayotte-na.*  
 INT Kawano paste P OK but not much ONO past-NEG-be-BEN-FP centre one  
 point only request-FP later tear off time difficult because-COP  
 'Well, Kawano. You may paste (it on the wall), but please don't paste K-BEN  
 it too securely. I beg you to paste it at only the centre part. Otherwise we  
 will have a hard time when we tear it off.' [Zankatei: 125]

This instance highlights the theoretical confusion of Matsushita's hypothesis, *kureru* as "another's voluntary deed-voice." In this excerpt the speaker explicitly tries to have the addressee (i.e. the agent of the favour) paste the poster lightly so that the speaker will be able to easily remove it. Note that the speaker issues this request to the specific addressee, Kawano. The presence of the addressee is the indication of the clear link between his request and the agent in the speaker's mind.

It is nonsensical to say that the command form (i.e. *kure*) is an exception from the meaning of the auxiliary. The auxiliary should have a single meaning regardless its conjugational forms, such as the attributive form, etc.

Now let's take a look at the example that Yamada uses to show the concurrence of *morau* and its imperative form.

- (10) (Shown as Example 26 on page 123 of Yamada 2004)

*Ja, dareka kita yatsu ni demo sutete-mora-e.*  
 then anyone came chap DAT such as throw away-BEN-IMP  
 'Then ask anyone who will be here to throw M-BEN it away.'

Although this command has been issued to the addressee, under the similar circumstantial situation depicted in Example 9, the addressee's role is significantly different. Note that the potential agent of this utterance is not the addressee but an unspecified person *dareka* 'someone.' This word is comprised of two morphemes, *dare* 'who' and *ka* 'interrogative particle.' In other words, the speaker has no particular person in mind. Although *kureru* and *morau* occur in their command forms, the targets that the command is issued to are remarkably different. That is, the former command is directly issued to the addressee (i.e. the 2nd person) to do the favor; in contrast, the latter command is issued to the addressee to have someone else (i.e. the 3rd person) do the favor. *Kure* asks the hearer to be the agent of the action, but *morae* indicates that the speaker does not have control over the probable agent.

Actually, the instances of *kure* commands are found much more frequently in the data than *morae* commands.

### 3. Present study and postulated model

This research postulates a schematic model of the Japanese benefactive system as based on the degree of the speaker's demand to put emphasis on the agent of the favor. In this model, each of the two auxiliaries has its own unique meaning. This one-to-one relationship between the forms and their respective meanings does not lead to the interpretation that the forms are sometimes interchangeable. The speakers' task of word choice will not be interfered with by partially identical meanings between the forms.

The use of *kureru* indicates that when the speaker presents the agent he or she intends to draw listeners' attention to the person performing the action rather than the action itself. Alternately, the use of *morau* indicates that the speaker wants to draw more attention to the benefit and less attention on the agent delivering

said benefit. In this study, the degrees of the speaker's emphasis on the agent will be characterized as AGENT FOCUS, and AGENT DEFOCUS, respectively. The semantic relationship between the forms is also described in terms of the degree of focus.

As for the notion of agent focus, Kirsner (1977) addresses the grammaticality/ungrammaticality of using sensory verbs in a passive construction in English. According to him, using non-agentive sensory verbs, such as *see* and *hear*, in a passive sentence is natural. On the contrary, using agentive sensory verbs (e.g. *watch* and *listen*) is unnatural. He attributes the reason to the speaker's agentivity considering that the agent of a passive sentence is backgrounded in the sentence. That is, if the speaker intentionally watches a person doing something, for instance, he/she may use the agentive verb in an active sentence (ibid. 176). Even though the study concerns just the non-agentive sensory verbs in English, we consider that the notion of the agent-backgrounding function of the passive voice is essentially relevant to the Japanese passive, causative, and *morau* constructions. That is, the agent in these constructions is marked by the dative case particle *ni*. Regarding the relationship to the causative construction, Kirsner considers that sensory verb passives are far less synonymous with their corresponding actives giving example passive sentences in which causative verbs are contained (ibid. 173). This is exactly the case with Japanese causative-passive construction in which the agent is marked by the dative case particle.

Diagram 1 shows the postulated model of the semantic opposition configured between the two auxiliaries.

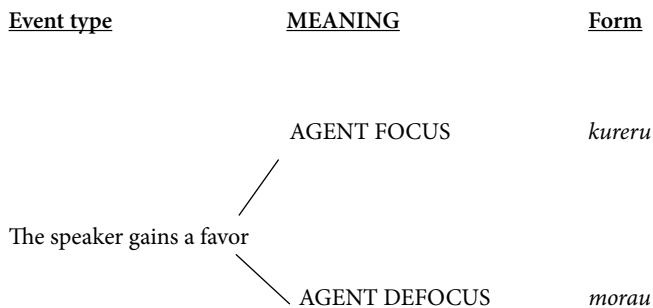


Diagram 1. Benefactive system

The model is a part of the entire giving/receiving system that is comprised of the opposition, namely, the speaker gives vs. gains. The auxiliary, *kureru* is classified as gains here. The gives node is removed from the diagram in this study.

3.1 Testing the validity of the model: Quantitative analysis

The data supporting the postulated model are comprised of approximately 1,300 instances of *kureru* and *morau*, which are used as helping verbs (i.e. auxiliary in common terms). The instances were collected from essay books written by various writers, and television news broadcasts. First, we closely examined each benefactive sentence and identified the agent of the favor. If the sentence does not introduce the agent, then we examined the adjacent sentences, the preceding ones or the immediately following ones. If the utterance is issued to the addressee, then the agent type is classified as addressee instead of being categorized as zero-agent. Second, we examined the kind of particles that marked the agent. Third, we examined the head noun of the relative clause in which either *kureru* or *morau* is used.

The discussion of the analysis mainly concentrates on the data collected from the thirteen essay books. This is because, as Sono notes, professional writers compose sentences with scrupulous care even in the minute parts and seemingly insignificant expressions in their work (*Aku to Fujun no Tanoshisa*: 8). We trust that the professional writers exploit the characteristic differences between the two auxiliaries by selecting the most pertinent form.

Table 1 shows the statistical result of the data analysis.<sup>1</sup> According to our hypothesis, we expect to see a preference for *kureru* to appear with overt agents, and *morau* with zero agents:

Table 1. Token frequency of the auxiliaries found in the collection of books

	<i>kureru</i>	<i>morau</i>
With overt agent	840 (96.9%)	159 (37.8%)
Zero agent	28 (3.1%)	262 (62.2%)

Table 1 confirms the general hypothesis: with tokens gathered from thirteen books written by five professional writers, 96.9% of the time *kureru* accompanies the agent. Only 3.1% of *kureru* usages appear without an introduced agent. In turn, *morau* co-occurs with its agent 37.8% of the time. In 62.2% of *morau* sentences the agent of the beneficial event is not presented. This clear asymmetric distribution of the agent occurrence patterns has never been mentioned in any research to my knowledge. These two sets of distributional bias are obviously the manifestation of the writers' intent of focusing or defocusing the agent.

1. For a full panorama of the quantitative data discussed here, see the appendix.

The writing style varies from one writer to another. Nevertheless, the data indicate the clear collocation of the agent and *kureru* in all books, and its absence with *morau* (See Table 2 below).

**Table 2.** Distribution of the auxiliaries found in the individual books with overt vs. zero agents

Book #	<i>Kureru</i> : 868 tokens		<i>Morau</i> : 421 tokens	
	With overt agent	Zero agent	With overt agent	Zero agent
1	122	3 (2.4%)	8	12 (60%)
2	98	3 (3%)	10	37 (78.7%)
3	50	0 (0%)	15	30 (66.7%)
4	69	2 (2.8%)	16	26 (61.9%)
5	18	0 (0%)	7	9 (56.3%)
6	33	2 (5.7%)	7	9 (56.3%)
7	59	1 (1.7%)	10	20 (66.7%)
8	53	5 (8.6%)	20	19 (48.7%)
9	50	0 (0%)	3	11 (78.6%)
10	86	2 (2.3%)	24	31 (56.4%)
11	63	4 (6%)	9	24 (72.7%)
12	33	2 (5.7%)	6	14 (70%)
13	107	3 (2.7%)	24	20 (45.5%)
Total	841 (96.9%)	27 (3.1%)	159 (37.8%)	262 (62.2%)

In Table 3 below, a division in agent type is made:

- a. The category “Agent + TOP” refers to the sentence in which the agent is marked by the topic marker, *wa*, and the benefactive auxiliary follows the phrase.
- b. The abbreviation NOM refers to the nominative case particle, *ga*.
- c. The abbreviation DAT refers to the dative case particle, *ni*.
- d. The category “Addressee” refers to the request specifically issued to the addressee. Some instances explicitly contain the term for the addressee; otherwise, the agent is mentioned in the context.
- e. The category R.C. Head noun person refers to the agent as the head noun of the relative clause in which the auxiliary is used. The category “R.C. others” indicates that the head noun is an item.
- f. The category “Other” refers to miscellaneous particles, such as the emphatic particle, *mo*. The typical particle preceded *kureru* is *mo*, and ablative case particle, *kara*.

When an overt agent is used, it is to be expected that more prominent agents show a preference for *kureru*, and less prominent ones for *morau*. Therefore, + TOP



should show a relative preference for *kureru*, as well as the addressee; NOM is supposedly more prominent than DAT. As for the Relative Clause category, 121 instances of *kureru* have person terms as a head noun, such as *hito* ‘person’ and proper names. Institutions and organizations, the United Nations, for instance, are counted as ‘person’ because manpower is actually an agent. In other words, the *kureru*-modifying clause is overwhelmingly used to introduce the benefactor. Only seven *kureru*-modifying clauses have concrete, abstract nouns (e.g. ‘human right’) as a head noun introducing the direct object (*Yana ga tsukutte-kureta* K-BEN *karee* ‘the curry rice that Yana cooked.’). Note that the agent in the modifying clause (i.e. embedded clause) is marked by the nominative case marker. This is true with other six instances. The ratio of the ‘person’ head noun to “other” is roughly 95%.

In case of the *morau*-relative clause, the ratio of the “person” to “other” is roughly 19%. These statistics clearly suggest the preference of using the *kureru*-relative clause to introduce a benefactor. In contrast to this, when a speaker adds a benefactive sense to the given help, a *morau*-relative clause may be the more apt expression. According to the data *morau* is chosen four times more frequently than *kureru*. These behavioral features underpin the proposed AGENT FOCUS and AGENT DEFOCUS meanings of *kureru* and *morau*, respectively. Table 3 shows the breakdown of the frequency.

**Table 3.** Distribution of the auxiliaries with overt agents over different agent type

	<i>Kureru</i> overall 868 (67.33%)	<i>Morau</i> overall 421 (32.66%)
Agent + TOP	251 (98.82%)	3 (1.18%)
Agent + NOM	340 (100%)	0 (0%)
Agent + DAT	0 (0%)	91 (100%)
Addressee	86 (91.5%)	8 (8.5%)
R.C. Head noun person	121 (93.8%)	8 (6.2%)
R.C. other	7 (17%)	34 (83%)
Other (Ablative)	35 (70%)	15 (30%)
	Total <i>Kureru</i> with agent: 841 (84.1%)	Total <i>Morau</i> with agent: 159 (15.9%)

Indeed we observe the expected preferences: except for Agent + DAT<sup>2</sup> and Other, all agent types have a clear preference for *kureru* with percentages higher than the mean frequency of *kureru* with overt agents (almost 84%, bottom line).

2. In a *kureru* sentence, the direct object and the indirect object are, respectively, marked by the accusative case particle and the dative case particle. The NP marked by the dative case particle, however, is not the agent but the beneficiary.

Other is a rest category, but all of these results are perfectly in line with the proposed hypothesis.

Regarding collocation with gratitude terms, such as *kansha* ‘thanks,’ these overwhelmingly co-occurred with *kureru*. In the data, there exist 60 instances of *kureru* with a gratitude term, whereas there exist only 6 instances of *morau* with such terms. In all these *kureru*-gratitude sentences, the agent is introduced.

The presences of elements that indicate gratitude are independent indications of the relevance of an agent (benefactor). Therefore, we would expect to see a preference of *kureru* with these elements, and of *morau* with their absence. Table 4 shows the results:

**Table 4.** Co-occurrences of *kureru* vs. *morau* with indications of gratitude

	<i>kureru</i>	<i>morau</i>
With gratitude	60 (91%)	6 (9%)
Without gratitude	808 (66%)	415 (34%)

The data exhibit the clear preference of using *kureru* when the speaker adds the gratitude element. The speaker uses the gratitude word in order to show his/her appreciation of the help. Thus, the agent is reasonably focused in such contexts.

**Table 5.** Occurrence of the command & potential forms: *kureru* and *morau*

	<i>kureru</i>	<i>morau</i>
Command form	85 (99%)	1 (1%)
Potential form	1 (11%)	7 (89%)
Overall frequency	86 (91%)	8 (9%)

The data show instances of *kureru* appearing in its command form *kure* and the command is directly issued to the hearer. Consequently, the utterance is imbued with a clear demand sense to the addressee. However, hitherto researchers examining the Japanese benefactive auxiliaries do not discuss *kureru* in request/causative sentences. Note that the frequencies of *kureru* and *morau* are in a ratio of roughly 9:1. These data connote that the speakers opted for *kureru* when they designate the addressee as the benefactor. The agent focus meaning must be apt for this purpose.

The request in Example 11 below is used to coerce the addressee to do a favour (to make a cup of tea) for the speaker.

- (11) *Sato-kun, ocha irete-kure-nai?* [Kore ga Sato: 162]  
 Sato-SFX tea leaf put-BEN-NEG  
 ‘Mr. Sato, won’t you please make K-BEN a cup of tea for me?’

The use of the addressee's name, Sato-kun, singles out Sato and obliges him to take an action. The use of *kun*, which is a diminutive form of Mr., to a younger co-worker openly indicates his authoritative attitude toward Sato.

In the data, while 86 instances of *kureru*-request are found, there are only 8 instances of *morau*-request. The former is 9.4% of 832 *kureru* instances. The latter is 4.8% of 159 *morau* instances. In other words, roughly 1 out of 10 (10%) *kureru* sentences is addressed to the interlocutor, whereas for *morau* the occurrence rate is roughly 1 out of 20 (5%). The significance of this is that *morau* cannot be designated as the primary auxiliary having a causative/request meaning since *kure* (the command form of *kureru*) is in fact used in this way much more often. These quantitative results have been mentioned in no existing research papers until now.

Based on this data analysis, we conclude that a writer/speaker uses *kureru* when he/she intends to draw the readers/hearers attention to the agent. In contrast, if a writer/speaker has little desire to draw the readers/hearers' attention to the agent, then he/she uses *morau*.

The practice of *morau* appearing in Examples 12 through 14 illustrates this agent defocus function.

- (12) *Hoteru ni modori, shiatsu massaaaji o yatte-morai, sono ato hoteru-nai no "airando kyuzu" toiu esutesaron ni itta.*  
 Hotel LOC return finger-pressure massage ACC do-BEN that after hotel-in GEN island cues called aesthetic salon LOC went  
 'I came back to the hotel and had M-BEN a finger-pressure massage, [and] after that went to the aesthetic salon called Island Cues.' [Matatabi: 46]
- (13) *Yushoku no jikan ninari, watashitachi joshi chiimu wa sarii o kisete-moratta.*  
 Dinner GEN time became we women team TOP sari ACC dress-BEN  
 'It became time for dinner, and we, the women's team, were dressed M-BEN in saris.' [Matatabi: 98]
- (14) *Sate watashi ga, youyaku shigotozukue ni mukai-dashita no wa tooka ijyo mo tatte kara. Shoka o taore-nu yoo koteishite-morai, hon o narabe shiryo o seirisuru no ni mikka kakatta.* [Rakurosho: 231]  
 well I NOM finally work desk LOC face-begin NOML TOP 10 days more EMP past after bookcase ACC fall-NEG to fix-BEN book ACC put materials ACC sort NOML P 3 days took  
 'More than ten days had passed before I finally started working at my work desk. It took three days for me to have the bookcases fixed M-BEN and arrange the books and other materials in order.'

In Example 12, the writer does not specify who gave a finger-pressure massage to her. The agent of the action could be anybody. It is absolutely impossible to identify

the person at all from the context. Similarly, in Example 13 there is no reference to the person who dressed the writer in a sari. The readers won't be able to find the agent. In Example 14 the writer depicts the aftermath of the catastrophic earthquake at her house. In this particular part of the essay she puts the focus of her writing on the immensity of the damage left by the calamity.

- (15) *Byoin e tsumete-kurete-iru kaseifukai no U-fujin wa, kateimuki no shigoto yorimo byoinkinmu no houga tenareteiru rashiku, mizu o eta uo noyooni, issou kibikibishite, kangofusantachi tomo haya uchitoke, papa no sewa o yaite-kureru.*

hospital at stay-BEN-be housekeeper GEN Mrs.U TOP household of work than hospital work GEN side accustomed to seems water ACC gain fish like more lively nurses with soon open papa GEN care ACC take-BEN  
'Mrs. U, who was dispatched from a housekeeper agency, has been sitting up K-BEN with my sick husband at the hospital and seems to like hospital work more than regular household work. She works in a very brisk manner, like a fish trying to get back into water. She almost immediately mingles with the nurses and takes care K-BEN of my husband.'  
[Zankatei: 85]

Note that the referent, Mrs. U, is accompanied by two instances of *kureru* in a single sentence. First, she is sitting up with the writer's sick husband at the hospital, and second she takes care of him at the hospital. The topic marker directly follows the noun phrase, Mrs. U. Thus she is the sole topic of the entire sentence. The uses of *kureru* enhance coherent writing in the context. Now, let's compare this instance to Example 16.

- (16) *Byoin ni denwasuruto, sugu korareru ka, tonokoto, yuushoku mo tora-zuni takushii de yuku. Konogoro yoru no aidajuu, papa o mite-moratte-iru Usan ni chokusetsu byouin e kite-morau.*

Hospital DAT call quickly come-POT Q QT matter dinner EMP have-NEG taxi by went lately night GEN during papa ACC watch-BEN-be Mrs. U DAT directly hospital to come-BEN  
'I called the hospital and was asked whether we can come immediately. We did not have dinner and rushed to the hospital by taxi. I asked Mrs. U, who has recently been taking care M-BEN of my sick husband during the night, to come M-BEN to the hospital directly.'  
(Zankatei: 81)

This excerpt is found in an essay in which the writer describes a time when her husband began haemorrhaging from his mouth. The writer depicts a flurry of events, in which she is the main agent as she contacts the hospital, requests the housekeeper to rush to the hospital, transports her husband to the hospital, and

so on. The housekeeper that is the agent in the relative clause is the object of the sentence. (The speaker is the subject.)

### 3.2 Testing the validity of the model: Qualitative analysis

Now we examine specific examples from the data to further check the applicability of the model.

- (17) *Hito ga umarete 100 nichi, mada ochichi shika nomenai noni, okuizome ni wa jibun no ohashi to ochawan o soreoete-morau. Konotoki kara ohashi tono tsukiai ga hajimaru noda.* (Soko no nai fukuro: 83)  
 person NOM was born 100 days not yet mother's milk only drink-POT-NEG CNJ okuizome at TOP self GEN chopsticks and rice bowl ACC prepare M-BEN this time from chopsticks with companionship GEN begin COP  
 'At 100 days old, even though a baby cannot consume anything except mother's milk, he/she is given M-BEN his/her own chopsticks and rice bowl to celebrate commencement of eating. This is the beginning of (our) companionship with chopsticks.'

This excerpt is found in the opening part of an essay, entitled Chopsticks. The central character is a set of chopsticks. Since the writer does not talk about a particular *okuizome* celebration 'commencement of eating,' who prepared the set of chopsticks and rice bowl for a baby does not matter at all. Thus, the writer plausibly defocuses the agent by use of the auxiliary.

- (18) *Tokyo e iku to ichizoku no mono wa Yasukuni-jinja de te o awasete-kuru. Ikka no tameni hataraki, motsu-bekarishi mise mo mot-e-zu, tsuma ya ko nimo en'usuimama chitta wakaishu o itami ni iku. Kuni no shusho nimo itande-mora-e-te, Yuichi niichan mo kokoro yasuragu to omou. Sore ga watashino Yasukuni dearu.* (Rakurosho II: 215)  
 Tokyo LOC go then relatives TOP Yasukuni Shrine at hands ACC join-come family for possess-should shop EMP possess-POT-NEG wife children also no fate scattered youth ACC mourn to go country GEN prime minister also mourn-BEN-POT-and Yuichi elder brother EMP soul have a peace QT think DEM SBJ my Yasukuni is  
 'Whenever any of my kin has chance to go to Tokyo, we visit Yasukuni Shrine to pray (for Yuichi's soul). We go there to mourn a young man whose fate was completely altered by the war. He could not own a shop even though it had been promised and also could not have a wife and children (because he died in the war). I think Yuichi's soul at Yasukuni is consoled because the prime ministers also mourned M-BEN him. That is the only meaning of Yasukuni for me.'

First of all, the beneficiary in this excerpt cannot possibly request the prime ministers to come and pray for him. He has been dead for sixty years. In reality, the ministers visited the shrine, most likely, just for their own benefit, that is to gain popularity from millions of voters related to the soldiers who died in the wars. In this benefactive event, the true beneficiaries are the agents (i.e. the several prime ministers). Thus, it may be reasonable for the writer to defocus the insincerity of the agents.

The excerpts in Examples 19, 20, and 21 individually come from televised interview in a news show. We compare the referent(s) of *min'na* 'everyone' in the three contexts.

- (19) (Interview with Agnes Chan: Broadcasted 10/11/07)

*"Ofuro ni hairu tabini chotto saware-ba shikori wa waku to omoimasu.  
Dakara sore o zehi min'na yatte-morai-tai desu."*

bath LOC enter each time lightly touch-if tumour TOP notice QT think so  
that ACC at any cost everyone do-BEN-DES COP

'If you touch your breasts lightly when you take a bath, then you can detect  
the tumour easily, I think. So I want everyone to do M-BEN this at all costs.'

The speaker of this utterance survived her breast cancer at the time the interview was conducted. She recommends an easy self-checking practice to everyone who is watching the televised interview. She is talking to numberless unknown people beyond the television cameras. The target group is an audience of women, yet it is impossible to specify exactly who they are. The term *min'na* 'everyone' in this excerpt actually does not refer to anyone whatsoever. Furthermore, the potential beneficiary is not the speaker herself but the addressee who will practice the suggested check up exercise daily. For this reason, the use of *morau* is perfectly suitable in the context.

- (20) (A fifth grader: Broadcasted 10/11/07)

*"Otonani nattara shefu ni natte sekai-juu no min'na ni tabete-morai-masu."*  
adult become-when chef DAT become world-in GEN everyone DAT  
eat-BEN-will

'When I grow up, I will become a chef. I will have everyone in the world eat  
M-BEN the food I cook.'

The speaker in this excerpt is an elementary school student answering the questions of an interviewer. In the preceding example, the target agents were Japanese women general, whereas in this instance the target agents are everyone in the world. What the two examples have in common is that in both instances the speakers will not themselves benefit from their advice or actions, and they cannot specify precisely who will be the beneficiaries. For this reason, they use the agent defocus auxiliary

to draw attention away from the identity of the beneficiaries and toward the benefit they are providing. In the data co-occurrences of *min'na* 'everyone' and *morau*, such as *nihon-ju no min'na* 'people all over Japan' are commonly found.

- (21) (Shin Tokitsukaze Oyakata: Broadcasted 10/11/07)

Reporter: *Saito-san e mukete no kimochi toiu no wa mina-san donoyooni uketomete-iru to omoimasu ka?*

Shin Tokitsukaze Oyakata: *Saito-kun no bun made min'na ganbatte-kureru to omoimasu.*

Reporter: Mr. Saito for present GEN thought that one TOP everyone how think-is QT think Q

New Tokitsukaze: Mr. Saito GEN part until everyone do one's best-K-BEN QT think

[Translation]

Reporter: How do you think all your pupils feel about the late Mr. Saito?

New Master: I think everybody will overcome this hardship and do their best.

In this interview, the topic refers to a homicide at a *sumo* 'sumo wrestling' stable. The previous master, who was already arrested, had instructed his pupils to assault Mr. Saito so he would learn more about the *sumo* world. Because of the background situation the term *minasan* 'the honorific form of everyone' refers exclusively to the late Mr. Saito's fellow pupils who were involved in the dreadful incident. In turn, the interviewee, who is the new master of the *sumo* stable, answers that he trusts his pupils will work hard to clear themselves of the scandalous charge. Unlike the previous two examples, the speaker himself is the beneficiary of his pupils' endeavour to change the stable's infamous reputation. Thus, the use of *kureru* is best in this context.

In Example 22 the speaker uses *morau* to mention an expected yet not promised agent.

- (22) (Interview with D. Matsuzaka: Broadcasted on 11/1/06)

*"Tokubetsu anoo, ikitai kyuudan ya sukina kyuudan tteiu no wa nai node, bokuni taisuru seitoona hyooka o shite-moraeru tokoro nara, doko demo ii desu."*

especially umm want to go baseball team P fond team QT one TOP none therefore me of fair assessment ACC do-BEN-POT place if any team COP-EMP fine is

'Well I don't have any particular team that I wish to play, and I don't have any favorite team either. So I would be happy to go to any team that gives M-BEN a very fair assessment of my ability.'

This excerpt comes from an interview of a famous young pitcher in a professional baseball team. He is in negotiations with several teams. The use of *morau* is suitable here because the speaker does not have any particular team on his mind. Because of the nebulous situation, the speaker may wish to defocus the potential employer. Thus, the choice of *morau* makes much more sense here than using the other auxiliary.

Finally, we take a look at Example 23 that illustrates the location of the saliency in the unfolding discourse.

- (23) *Minami afurika de hajimete watashi wa bodan doa o soubishita kuruma toiumono ni nosete-moratta. Untenshu-san ga akete-kure-nai to ginkou no daikinko no to mo kakuya to omouhodo kuruma no doa ga omokute nakanaka watashi no chikara de wa hiraka-nai.*

South Africa LOC first time I TOP bullet proof door ACC equipped car such  
LOC ride-BEN chauffeur NOM open K-BEN-NEG then bank GEN big safe of  
door too so QT think car of door NOM heavy hardly my power with TOP  
open-NEG

'I had a chance to ride M-BEN in a bullet-proof car in South Africa for the first time in my life. I could not open the heavy door without the chauffeur's help. I imagined that the door was as heavy as the door of the big safe at a bank.'

The writer of this excerpt depicts the unusual heaviness of the door of a bullet-proof car. She was given this opportunity, though the writer never identifies the benefactor at any point in the essay. Thus while the event itself is marked with *morau*, the chauffeur's help is marked with *kureru*. His help is directly relevant to the topic, i.e. opening the unusually heavy door.

#### 4. Conclusion

In this paper, we explored the Japanese benefactive system comprised of *kureru* and *morau*, concentrating on their auxiliary uses. Our goal was to clarify the pragmatic concern whereby Japanese speakers choose the most suitable auxiliary in the particular context.

We examined the co-occurrence of the auxiliary and the clearly stated agent(s). The most remarkable finding of this research is that the data uncovered the behavioral contrast observed in actual uses of the auxiliaries. The speakers actually introduce the agent of the favor in more than 96% of *kureru* sentences. On the contrary, the speakers overtly mention the agent in less than 40% of *morau* sentences. Ellipsis is not responsible for this result.



The second significant finding is the distributional contrast between the *kure*-request and *morau*-request. These are directly issued to the hearer in his or her presence. Roughly 10% of all *kureru* sentences are command/request. In contrast, 5% of all *morau* sentences are command/request. These statistical results call into question the common assumption that only *morau* decodes the speaker's intentional action to get the agent's help. The data of this investigation does not support the commonly accepted assumption that *morau* solely causes the hearer to take an action that benefits the speaker.

An interesting finding is the close relationship between *kureru* and appreciation terms, e.g. *kansha-suru* 'be grateful.' This supports those who claim that speakers use *kureru* when they want to invoke thankfulness modality.

We proposed a grammatical model of the system that enables us to explain the uses of the auxiliaries. According to the postulated model, no two auxiliaries are interchangeably used in a particular position in discourse. The AGENT FOCUS auxiliary, *kureru*, represents the speaker's notion of guiding the audience's attention to the agent of the favor. Quite the opposite, the AGENT DEFOCUS auxiliary, *morau*, represents the speaker's connotation of backgrounding the agent in the depiction of the event.

In sum, the analysis of the data reveals the shortcomings of previous accounts that posit that a speaker's selection of auxiliaries is based on the type of the empirical fact relating to how the kind deed materializes. We came to a conclusion that the speaker's prior request to the agent has little to do with word choice. Instead the degree of the speaker's desire to put semantic emphasis on the agent in order to draw attention to it induces his/her task of choosing one form over the other.

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Appendix

Table. Token frequency of the auxiliaries found in the individual books

Book #	<i>Kururu</i> : 860 tokens			<i>Morau</i> : 421 tokens		
	With apparent agent	Zero agent		With apparent agent	Zero agent	
1	Agent + TOP	53	3 (2.4%)	Agent + DAT+TOP	0	12 (60%)
	Agent + NOM	44		Agent + DAT	7	
	Addressee	15		Addressee	1	
	R.C.	8		R.C.	0	
	Other	1		Other	0	
2	Agent + TOP	14	3 (3%)	Agent + DAT+TOP	1	37 (78.7%)
	Agent + NOM	64		Agent + DAT	9	
	Addressee	8		Addressee	0	
	R.C.	7		R.C.	0	
	Other	5		Other	0	
3	Agent + TOP	20	0 (0%)	Agent + DAT+TOP	0	30 (66.7%)
	Agent + NOM	14		Agent + DAT	12	
	Addressee	15		Addressee	0	
	R.C.	0		R.C.	0	
	Other	1		Other	3	
4	Agent + TOP	29	2 (2.9%)	Agent + DAT+TOP	0	26 (61.9%)
	Agent + NOM	30		Agent + DAT	14	
	Addressee	3		Addressee	2	
	R.C.	4		R.C.	0	
	Other	3		Other	0	
5	Agent + TOP	7	0 (0%)	Agent + DAT+TOP	0	9 (56.3%)
	Agent + NOM	6		Agent + DAT	3	
	Addressee	1		Addressee	2	
	R.C.	3		R.C.	0	
	Other	1		Other	2	
6	Agent + TOP	9	2 (5.7%)	Agent + DAT+TOP	0	9 (56.3%)
	Agent + NOM	11		Agent + DAT	5	
	Addressee	8		Addressee	0	
	R.C.	5		R.C.	1	
	Other	0		Other	1	
7	Agent + TOP	13	1 (1.7%)	Agent + DAT	0	20 (66.7%)
	Agent + NOM	15		Agent + DAT	7	
	Addressee	16		Addressee	0	
	R.C.	11		R.C.	0	
	Other	4		Other	3	

8	Agent + TOP	13	5 (8.6%)	Agent + DAT+TOP	1	19 (47.5%)
	Agent + NOM	19		Agent + DAT	14	
	Addressee	3		Addressee	0	
	R.C.	15		R.C.	1	
	Other	3		Other	4	
9	Agent + TOP	11	0 (0%)	Agent + DAT+TOP	1	11 (73.3%)
	Agent + NOM	19		Agent + DAT	1	
	Addressee	1		Addressee	0	
	R.C.	15		R.C.	1	
	Other	4		Other	0	
10	Agent + TOP	27	2 (2.3%)	Agent + DAT+TOP	0	31 (56.4%)
	Agent + NOM	26		Agent + DAT	15	
	Addressee	3		Addressee	1	
	R.C.	28		R.C.	2	
	Other	2		Other	6	
11	Agent + TOP	19	4 (6%)	Agent + DAT+TOP	0	24 (72.7%)
	Agent + NOM	31		Agent + DAT	9	
	Addressee	3		Addressee	0	
	R.C.	7		R.C.	0	
	Other	3		Other	0	
12	Agent + TOP	9	2 (5.7%)	Agent + DAT+TOP	0	14 (70%)
	Agent + NOM	12		Agent + DAT	4	
	Addressee	4		Addressee	1	
	R.C.	7		R.C.	1	
	Other	1		Other	0	
13	Agent + TOP	27	3 (2.7%)	Agent + DAT+TOP	0	20 (45.5%)
	Agent + NOM	49		Agent + DAT	19	
	Addressee	6		Addressee	1	
	R.C.	18		R.C.	2	
	Other	7		Other	2	
Category total	Agent + TOP	251	Zero Agent	Agent + DAT+TOP	3	Zero Agent
	Agent + NOM	340		Agent + DAT	119	
	Addressee	78		Addressee	8	
	R.C.	128		R.C.	8	
	Other	35		Other	21	
Total		832	28		159	262
With Agent		96.7%			37.8%	
0 Agent			3.3%			62.2%



## **PART II**

# **Phonology as human behavior**



# Phonology as human behavior from an evolutionary point of view

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The ultimate task of phonology is to discover the cause of the behavior of speech sounds. To do this phonologists must refer to the way speech is created and used by human beings...

John J. Ohala (1983: 189)

This paper summarizes the basic theoretical and methodological tenets of the theory of Phonology as Human Behavior (PHB); shows how it has analyzed the phonological systems of languages from diverse language families, developmental and clinical phonology, and inflectional, lexical and grammatical systems both synchronically and diachronically. Various aspects of evolutionary phonology will then be explained according to the principles of PHB such as: the favoring of CV syllables and specific phonemes in word initial and word final positions. These evolutionary hypotheses conform to the principles of the theory of PHB indicating that different approaches can account for phonological and phonotactic phenomena if they share a functionalist, human, and communication oriented point of view.

## 1. The theory: Phonology as human behavior (PHB)

This paper summarizes the basic theoretical and methodological tenets of the theory of Phonology as Human Behavior (PHB) (also known as Columbia School Phonology) (e.g. Diver 1979; Davis 1984/1987; Tobin 1997a). It then shows how the theory has been applied to explain the combinatory phonology of various languages from diverse language families and the phonotactics of the processes in developmental and clinical phonology; as well as the morphophonemics of inflectional morphology in English and the lexicon in Hebrew both synchronically and diachronically. The theory will then be applied to explain some of the most fundamental tenets that have been established for evolutionary phonology. The theory of PHB, developed by William Diver and his students of the Columbia school, combines aspects of the “communication factor” inherent in Prague School phonology (Tobin 1988) with aspects of the “human factor” inherent in Martinet’s diachronic phonology (Martinet 1955). The major parameters of the theory are presented according to the functional semiotic definition of language as a sign



system used by human beings to communicate or, alternatively as a symbolic tool whose structure is shaped both by its communicative function and by the characteristics of its users. The fundamental axiom underlying the theory is that language represents a struggle between the desire for maximum communication (the communication factor) with minimal effort (the human factor) (Tobin 1990a). The major contribution of the theory of PHB is that it provides an explanation for the distribution within the speech signal: i.e. it tells us why the distribution of phonemes within a language is not random but motivated.

### 1.1 The four orientations underlying the theory of PHB

Four orientations underlie PHB:

1. the communication factor;
2. the physiology of the vocal tract;
3. the acoustic medium;
4. the human factor. (adapted from Diver 1979; Tobin 1997a)

The communication factor and the human factor have been introduced above and will be further elaborated upon in this paper. The physiology of the vocal tract is related to how human beings learn to control specific musculature to alter the air stream in the production of speech sounds (articulatory phonetics), and the acoustic medium refers to how human beings perceive these sounds (acoustic phonetics). These orientations are directly related to the semiotic and synergetic definition of language as a sign system used by human beings to communicate.

One of the aspects of the theory of PHB that separates it from other phonological theories is its recognition of the interdependence of the abstract phonological system of *langue* and the concrete distribution of sounds in *parole*. This integral connection between phonetics and phonology is supported by a theoretical and methodological model based on sound units similar to what have traditionally been called phonemes versus allophones (cf. Diver 1995: 62–64; Davis 2006) contain various features which systematically link them together according to their communicative function and reflect the characteristics of human perception, cognition and behavior relevant to their exploitation (Tobin 1997a: 18–23).

### 1.2 Viewing phonetics/phonology as human behavior

The following principles underlie the classification of sounds or phones into what are traditionally called phonemes and allophones. Phones should be classified as phonemes versus allophones based on: (a) their contribution to communication (phoneme versus allophone): the communication factor; (b) the specific primary distinctive versus secondary non-distinctive articulatory and acoustic features which speakers must learn: the human factor; (c) the relative non-predictability of the distribution of phonemes in minimal pairs (the communication factor) versus

the predictability of the complementary distribution of allophones (the human factor). There is a systematic interchangeability of phonemes and allophones across languages and within the same language in different periods that can be explained from the points of view of the communication and human factors. The fact that all languages have a similar number of phonemes (usually between 20–40) which are acquired in a similar order across languages and their diachronic versus synchronic relationships to alphabet systems and orthography can be related to both factors. The asymmetric relationship between the number of phonemes versus the number of allophones in language systems and our awareness of phonemes versus allophones can be explained from the synergetic point of view of maximum communication with minimal effort (Tobin 1997a: 18–23).

The following principles, derived from research on several languages, underlie the replacement of traditional and neo-traditional phonetic and phonemic categories and labels with new concepts related to PHB which illustrate the unity of sounds and sound classes as part of a single hierarchy (Davis 1984/1987; Tobin 1990b,c, 2000, 2002a–d; Tobin & Miyakoda 2001, 2006), Dreer 2006; Azim 2002; Hameed 2004; Jabeen 1993; Fatihi 1987; Flores 1997; Dekker & de Jonge 2006).

1. Consonants are referred to as *phonemes of constriction*.
2. Vowels are referred to as *phonemes of aperture*.
3. Features such as Voiced versus voiceless, nasal versus oral, emphatic versus non-emphatic, ejective versus non-ejective, retroflexed versus non-retroflexed, palatalized versus non-palatalized, nasal versus oral, and labialized versus non-labialized, etc., are studied in terms of *the number of sets of articulators* being exploited simultaneously and the degree of the difficulty of their control from the point of view of the human factor.
4. Place of articulation for phonemes of constriction is replaced with the notions of *active articulators* versus *passive receptors*.
5. The tongue and the lips are viewed as active articulators for phonemes of aperture concerning the height and position of the former and the degree of rounding or spreading for the latter.
6. The division of the tongue into *anterodorsum* and *posterodorsum* as active articulators does not only serve to distinguish phonemes of constriction but can also replace the traditional categories of front versus back vowels respectively as the active articulators for phonemes of aperture.
7. Most (if not all) of the other various traditional categories of manner of articulation of consonants and vowels versus semi-vowels such as plosives, trills, flaps, glides, liquids, approximants, etc should be replaced by a unified hierarchical set of *degree of stricture*, *aperture* and *type of airflow* that is applicable to both phonemes of constriction and phonemes of aperture which now may be viewed as a single, holistic continuum or cline of sounds.

8. *Mobile* phonemes (e.g. stops which require the movement of the active articulators for closure and release or a trilled /r/) versus *stable* phonemes (e.g. fricatives which hold the active articulators in a steady position or the lateral approximant /l/) can replace former categories of manner of articulation for phonemes of constriction and can be applied to both phonemes of constriction and phonemes of aperture replacing categorizations such as obstruents versus sonorants and syllabic versus non-syllabic phonemes.
9. Tenseness versus laxness and fortis versus lenis can be studied from the point of view of the amount of effort needed to control different sets of articulators and musculature for all sounds regardless of their classification as phonemes of constriction or aperture.
10. The difference between simple phonemes versus complex phonemes (stops and fricatives versus affricates and monophthongs versus diphthongs) can be explained from the point of view of the synergetic interaction between the desire for maximum communication with minimal effort.

The following principles can explain the non-random distribution of sounds both within the phonemic inventory of a language system as well as within meaningful units of language:

1. maximum communication is achieved by investing human effort in the exploitation of the extremities of the oral vocal tract which provide the most distinct acoustic cues (e.g. grave and acute loci) in opposition to a neutralized center:
  - a. the lips versus the posterodorsum in opposition to the apex (front-back-middle) the most adroit of the articulators for phonemes of constriction;
  - b. the vowel triangle: /i/ versus /u/ in opposition to /a/ (front-back-middle) for phonemes of aperture.
2. When these optimal oral oppositions are exploited, further communicative distinctions are made by exploiting the musculature between the extremes and the middle or by extending their boundaries:
  - a. by adding additional passive receptors (teeth, hard palate) or less adroit active articulators (anterodorsum, uvula, pharynx, glottis) or the vocal folds (for the glottal stop /ʔ/ and fricative /h/ as well as for tone, murmur, creakiness, etc. in addition to voicing) for phonemes of constriction and aperture;
  - b. by exploiting the intermediary tongue positions between the high and low front and back points of the vowel triangle /e/, /ɛ/, /æ/, /a/, /ɔ/, /o/, etc.
3. Additional communicative distinctions can be made by exploiting the adroit active articulators in different ways requiring more effort and thus creating

marked sounds such as lateral, retroflex, emphatic, ejective, velarized, nasalized, etc. phonemes.

4. More complex sounds requiring greater effort (affricates, diphthongs, etc.) can create further communicative distinctions as well.
5. In all of the above processes there also will be a favoring of adroit active articulators and a preference for the excitation of fewer sets of articulators when possible as a result of the human factor.
6. The differences in the higher communicative force of utterance-initial versus the lower communicative force of utterance-medial versus utterance-final positions also will affect the choice of more adroit versus less adroit, or more visual versus less visual articulators, and phonemes requiring one, two or three sets of articulators.
7. In most, if not all languages, the relative number and the proportion of marked versus unmarked phonemes will be similar, although the features being marked will differ from language to language.
8. In most, if not all languages, the number and kind of phonemes and their role in syllable structure will be based on the differences of the communicative forces of phonemes of constriction which impede the airflow in relation to phonemes of aperture which provide free movement of air.

### 1.3 The fundamental analytic position of PHB

The motivation for the explanation of the non-random phonological distribution is based on the following theoretical and methodological assumptions:

1. Users of a language behave as though they have learned certain distinctive units, the phonemes, which they deploy for communicative purposes.
2. We cannot observe directly what it is that they behave as though they have learned.
3. We can however observe the phonotactic skewing, a skewing that has been built up over the centuries and millennia in the very mouths of the speakers.
4. We can infer that these long-range skewings represent favorings and disfavorings on the part of users of the language. (It is to be observed that the skewings are not idiosyncratic to particular languages; their general characteristics recur from language to language.)
5. We can then examine the favorings and disfavorings against the background of the orientation – which means with independent knowledge of what kinds of favorings and disfavorings humans are prone to in areas other than the use of language.
6. We can infer that a disfavoring, for example, represents a difficulty in a learning process, and by a close examination of what it is that constitutes a

difficulty in the way of a particular learning process, we can infer what it is that is being learned.

7. What it is that is being learned we may identify as a characteristic of the distinctive units. (adapted from Diver 1979; Tobin 1997a)

## 2. Quantitative results and principles obtained from the theory

All of the above mentioned research as well research on the phonotactics of certain classes of initial consonant clusters across languages (cf. Diver 1979; Davis 1984/1987; Tobin 2002b) yielded quantitative results, which support the following principles concerning the non-random distribution of phonemes in and across languages:

1. additional articulators are disfavored;
2. coarticulation by near articulators is disfavored;
3. coarticulation by the same articulators/phoneme is even more highly disfavored (particularly in the roots of Semitic languages);
4. different word (or root) positions have different communicative force and thus affect the favoring and disfavoring of different articulatory and acoustic features and phonemes;
5. apical articulations are favored in general and in final position in particular;
6. visual articulations are favored, particularly in word/root initial position;
7. explosive (mobile/stop) phonemes are favored in initial position;
8. turbulent (stable/fricative) phonemes are favored in final position;
9. transitions from one distinct constriction to another within a single phoneme (affricates) are disfavored;
10. consonant clusters are restricted concerning different articulatory and acoustic features (e.g. mobility/stability);
11. among constrictions, maximal constriction is favored;
12. among apertures, maximal aperture is favored;
13. sequences of phonemes with the same articulators are disfavored unless their juxtaposition is, by virtue of some other factor, mutually beneficial.

These principles empirically support the following conclusion:

*Conclusion #1:* Language in general – and phonology in particular – can be seen as a mini-max struggle: the desire to create maximum communication with minimal effort. This synergetic principle is most evident in the nonrandom synchronic phonotactic distribution of phonemes in languages as well as in their diachronic development.

## 2.1 Initial consonant clusters across languages

The first combinatory phonological analysis performed within the theory (Diver 1979) explained the nonrandom phonotactic distribution of initial consonant clusters of the type  $C_1C_2$  where  $C_1$  is either a mobile (stop) or stable (fricative) phoneme of constriction and  $C_2$  is either /r/ (mobile) or /l/ (stable) indicates the following phonological principles in an ascending order of strength:

1. like phonemes prefer to collocate with each other (same are favored, different are disfavored): mobile + mobile and stable + stable;
2. additional articulators are less favored: voiced vs. voiceless;
3. coarticulation by the same articulators/phoneme is even more highly disfavored.

These three principles regarding the non-random distribution of initial consonant clusters of this type based on the theory of PHB have been further tested and supported across various languages representing diverse language families (Indo-European: Germanic (German (Middle, High/Modern, Yiddish, Dutch, Afrikaans, Swedish, Norwegian, Danish); Romance (Latin (Vulgar/Classical), French, Spanish, Portuguese, Catalan, Romansch, Sardinian, Romanian); Celtic (Irish, Welsh); Slavic (Russian, Ukrainian, Polish, Czech, Slovak, Serbo-Croatian, Bulgarian); Baltic (Lithuanian, Latvian); Hellenic (Classical/Modern Greek); Albanian; Indo-Iranian (Bukharian (Judeo-Persian)); Semitic (Hebrew, Arabic (Classical/ Moroccan, Aramaic); Finno-Ugric (Finnish, Estonian, Hungarian); Caucasian (Georgian (Grusinski)); Dravidian (Malayalam); Tibetan; and “artificial” languages (Esperanto, Klingon) (Tobin 1997a, 2002c) with similar results albeit with different degrees of strength which may be influenced by historical and extralinguistic factors leading to the following conclusion:

*Conclusion #2:* Similar favorings and disfavorings found for the nonrandom phonotactic distribution of initial consonant clusters of the type  $C_1C_2$  where  $C_1$  = a mobile/stable phoneme of constriction and  $C_2$  = /r/ or /l/ can also be found in other languages belonging to diverse language families albeit with different degrees of compatibility which may be influenced by diachronic and extralinguistic factors.

## 3. Developmental and clinical phonology: Natural Phonology versus PHB

In the last twenty years the theory of PHB has been applied to the areas of developmental and clinical phonology for monolingual and bilingual speakers of diverse

languages such as Hebrew, Palestinian Arabic, Spanish, English and Japanese (e.g. Enbe 2003; Enbe et al. 2006; Enbe & Tobin (2008), Gan et al. 1995; Green 2005; Halpern & Tobin 2008; Tobin 1995a, 1997a,b, 1999, 2002c, 2009a; Tobin & Miyakoda 2001, 2006) and Israeli Sign Language (Fuks & Tobin 2008; Tobin 2008). This developmental and clinical research focused on both segmental phonology as well as on intonation and prosody highlighting the differences between PHB and other functional and generative theories of phonology such as Natural Phonology (e.g. Grunwell 1987; Ingram 1990; Stampe 1972/1979) and Optimality Theory (e.g. Kager 1999) which are compared and contrasted with PHB theoretically and methodologically in Tobin (2000, 2009b). This research has shown that developmental and clinical phonology represent an even more extreme version of the mini-max principle underlying PHB found in Conclusion #1 above (cf. Tobin & Miyakoda 2001, 2006).

*Conclusion #3:* Developmental and clinical speech errors may be viewed as an extreme version of the mini-max struggle: there is less than maximum communication because of either extreme minimal effort or a lack of control over the articulatory tract or mechanisms. Greater effort will be exerted in order to achieve more efficient or better communication through clinical intervention.

#### 4. PHB and lexical and grammatical systems: The iconic connection between signal and meaning

##### 4.1 PHB: From phonology to the lexicon

Tobin (2004) explored the connection between form and meaning in Hebrew roots. Specifically, he found a common semantic denominator in the tri-consonantal (CCC) Hebrew roots containing the phoneme /r/ as C-II (C-r-C) revolving around the general concept of *A Change in Structure* exemplified in the following examples of /p-r-C/ roots:

1. /p-r-m/ - 'unstitch, undo stitches, untie, unbutton, rip; tear open, rend (clothes), rip, cut, chop'
2. /p-r-f/ - 'fasten together (with a pin), pin up (hair), button'
3. /p-r-t/ - 'expand, extend'
4. /p-r-t'/ - 'divide into small parts; split, make change ('break a dollar'); separate, specify, itemize, detail, divide'
5. /p-r-d/ - 'separate, branch off, disintegrate, loosen, decompose, depart, divide, divorce'

6. /p-r-s/ - 'slice (break, cut bread), spread, deploy, fan out, be divided, broken'
7. /p-r-ʃ/ - 'spread, cast, stretch out, expand, extend, unfurl'
8. /p-r-z/ - 'exaggerate, overdo, overstate, be excessive, spread the fingers'
9. /p-r-ts/ - 'break, break through, demolish; erupt, make a breach, crack, destroy; burst, rush upon; spread, increase, overflow, break out'
10. /p-r-r/ - 'crumb, crumble, break into crumbs; shatter, undermine'
11. /p-r-q/ - 'unload; deliver, set free, extricate; break, remove, dislodge, dismantle, disassemble, decompose, disjoint, demolish, liquidate, take apart, wind up, solve, resolve, crack'
12. /p-r-x/ - 'crush, break, crumble; smash'
13. /p-r-ħ/ - 'blossom, bloom, burst forth, burgeon, sprout; flourish, prosper, thrive, spread out'
14. /p-r-ʃ/ - 'uncover (esp. hair), be dishevelled, disordered, unkempt; wild-looking'
15. /p-r-ʔ/ - 'bring forth, bear, yield (fruit), bloom'
16. /p-r-h/ - 'grow, produce, reproduce, be fruitful (fertile), thrive, flourish'

This general semantic field of *A Change in Structure* is reflected in this particular partial set of phonologically related roots in the following polaric processes:

- a. *the division/separation of a whole into its component parts*: (1) /p-r-m/ 'unstitch; ... cut, chop' (4) /p-r-t/ 'divide; split, make change ('money')...', (5) /p-r-d/ 'separate... disintegrate... decompose, depart, divide, divorce', (10) /p-r-r/ 'crumb, crumble; shatter...', (11) /p-r-q/ 'unload; ... break, ... dismantle, disassemble, decompose, disjoint, demolish,... take apart, crack', (12) /p-r-x/ 'crush, break, crumble; smash';
- b. *the extension of the boundaries of a whole*: (3) /p-r-t/ 'expand, extend', (7) /p-r-ʃ/ 'spread, cast, stretch out, expand, extend, unfurl', (p-r-z/ 'exaggerate, overdo, overstate, be excessive, spread the fingers', (13) /p-r-ħ/ 'blossom, bloom, burst forth, burgeon, sprout; ... spread out...', (15) /p-r-ʔ/ 'bring forth, bear, yield (fruit), bloom', (16) /p-r-h/ 'grow, produce, reproduce, be fruitful (fertile), thrive, flourish'; or:
- c. *A Change in Structure* that includes both the antonymous or antithetical meanings of these polaric processes in a single root: (6) /p-r-s/ 'slice (break, cut bread), spread, deploy, fan out, be divided, broken', (9) /p-r-ts/ 'break, break through, demolish; erupt, make a breach, crack, destroy; burst, rush upon; spread, increase, overflow, break out'; and/or
- d. *a modification of the size, shape or proportions of a whole*: (2) /p-r-f/ 'fasten together (with a pin), pin up (hair), button', (14) /p-r-ʃ/ 'uncover (esp. hair), be dishevelled, disordered, unkempt; wild-looking'.



The analysis of all the /C-r-C/ roots found in various dictionaries showed that the general semantic field of *A Change in Structure* can be further divided into various related contextual sub-fields in the following descending order of the number of /C-r-C/ roots they contain: *Physical Changes* (40), *Extensions* (general) (40), *Extensions over Territory* (20), *Divisions* (30), *Border Changes* (18), *Heat Changes* (12), *Surface Changes* (12), *Mental State Changes* (12), *Connections* (12), *Control* (10), *Food/Health* (8) *Covering* (7), *Cloth* (7) *Collecting* (3).

This connection between phonology and the lexicon was inspired by a general sign-oriented orientation (cf. Ferdinand de Saussure 1916/1959; Roman Jakobson 1941/1968, 1970; Jakobson & Waugh 1979; Tobin 1988a, 1989a; Waugh & Rudy 1991 and Andrews & Tobin 1996, and the principles of the Columbia School, Klein-Andreu 1983; Contini-Morava & Sussman Goldberg 1995; Contini-Morava & Tobin 2000; Contini et al. 2004; Reid et al. 2002; Davis et al. 2006) and PHB in particular (cf. Tobin 1989b, 1990a, 1991a,b, 1993, 1995b, 1996, 2002a–c) and is currently being expanded to include other triconsonantal root combinations as well as English non-lexical interjections (Joue & Collier 2006).

Research applying the principles of PHB to the realm of the lexical Triconsonantal (CCC) Hebrew Root in general and diverse Reduplicated CCC Root Patterns (Tobin 2002a–c) and the grammatical systems of the Hebrew verb-conjugation *binjan* (and other) systems (Tobin 1989, 1990a, 1991a,b, 1993, 1995b, 1996) hypothesized an iconic holistic connection between the signals and meanings in these lexical-grammatical systems (Contini-Morava & Tobin 2000) that serve as an economical mnemonic memory-saving device of linguistic classification which supported the following conclusions:

*Conclusion #4:* The non-random distribution of signals and meanings within the linguistic sign may be viewed as an example of a synergetic, linguistic, or semiological economy: in general, inventories of items are more readily learned, digested and recalled when their items are sub-categorised in a preliminarily intuitive way in the form of a mnemonic economy or a memory-saving device – i.e. a way of cutting down the amount of effort required for memorizing and remembering all the well-formed elements of a system ... If, ... the objects to which the *figurae* bear some similarity are closely connected with the semantic content of the *signa* in whose expression these *figurae* are used, the interrelatedness achieved by this similarity will also make the memorization of the *signa* (and their appropriate form-meaning associations) considerably more economical.

(adapted from Hervey 1982, 1985: 141, 155; 1988: 27, 32)

## 5. PHB and morphology

### 5.1 Inflectional phonology in English

Research applying the principles of PHB to the realm of inflectional morphology in the synchronic and diachronic development of inflectional phonology in PIE, Proto-Germanic and Old, Middle, and Modern English (Tobin 2006) postulated the following hypotheses:

1. Inflectional morphology (number, gender, case, tense, etc.) is both functional and frequent and should, therefore, in principle, be composed of phonemes that are either unmarked, and/or relatively easy to make.
2. Diachronically speaking, this hypothesized tendency for favoring unmarked or relatively easier phonemes in inflectional morphology should increase over time.

These synchronic and diachronic hypotheses were strongly supported by the data.

Similar results indicating phonological and morphological simplicity in general and increasing over time for the following languages of different language families were found for Old Church Slavonic, Old Russian and Modern Russian (Buk 2003), Latin (Cohen 2001) compared with modern Romance languages such as Ladino, Spanish and Portuguese (Tubul 2002; Oron 2003), Arabic (Saif 2004), Hebrew (Oren 1997; Shokty & Perelshtein 2004) and Hungarian (Salmon 2002). Additional research for derivational morphology is being planned and executed in these languages and for both inflectional and derivational morphology in other languages to see whether there is a similar non-random distribution of phonemes synchronically and diachronically in inflectional and derivational affixes which further support the principles of PHB. Results in Hebrew for both inflectional and derivational morphology (Shokty & Perelshtein 2005; Perelshtein 2008) show similar tendencies for both inflectional and derivational morphology as well.

This morphophonological research has led to the following conclusions:

*Conclusion #5:* The non-random distribution of inflectional (and possibly derivational) morphology may be viewed as an example of the linguistic economy or the synergetic relationship found in the linguistic sign: the simpler the meaning of the linguistic sign (*signifié*) the more unmarked the phonemes/morphemes of its signal (*signifiant*) the more complex the meaning of the linguistic sign (*signifié*) the more marked the phonemes/morphemes of its signal (*signifiant*).

## 6. PHB and evolutionary phonology

The above research applying PHB to developmental, clinical and inflectional phonology as well as to other lexical and grammatical systems both synchronically and diachronically raised questions concerning the possible evolutionary aspects of PHB. Various aspects and tendencies attributed to evolutionary phonology have been raised in MacNielage and Davis (1999) which can directly be related to and explained by the principles of PHB:

1. **Favoring of CV syllables: “Frames of syllabic C-V alternations”** (MacNielage 1998; MacNielage et al. 1999): Alternation between open (PHB: vowels = phonemes of aperture) and closed (PHB: consonants = phonemes of stricture) mouth configurations where the vowel is the nucleus or “keystone” of the syllable “flanked” by consonants (Diver 1995:68–69). CV sequences as minimal sequence (Blevins 1995) predominate over CCV sequences which are “strikingly rare” (Maddieson 1999:2525). Even in complex consonant clusters (e.g. VCCCV) “the consonant most distant from two vowels in a sequence tends to have a more closed mouth (PHB: maximum stricture) than contiguous consonants (MacNielage & Davis 1999:6).

*Explanation according to PHB:* This CV(C) syllable frame sequence provides a most efficient synergetic compromise for the “mini-max” struggle between the human and communication factors. There is also an important physical reason to start with a C: in order to get the vocal cords into action, pressure is needed; a C before V is a very useful and effective way to do so. The CV(C) syllable frame opens with a phoneme of stricture that impedes the airflow, but also provides a clear-cut communicative distinction (attested to by the greater number of consonants than phonemes of aperture in languages and the existence of syllabaries: consonant-only syllabary writing systems such as those found in Semitic languages). The initial consonant flanks an audible vowel which provides a free flow of air as the syllabic nucleus, or keystone, which, metaphorically speaking, allows us to breathe, accumulate, and organize the air stream for further communication in the form of another consonant. In addition, the vowel in the keystone position provides the maximum amount of acoustic cues concerning the perception of both the flanking consonants preceding and following it: an efficient synergetic solution for maximum communication with minimal effort. Furthermore, consonant clusters are restricted concerning different articulatory and acoustic features (e.g. mobility/stability) and recently borrowed/exapted for speech (MacNielage 1991, 1998; MacNielage et al. 1999) and was used in non-human primates for ingestion.

2. **“Mandibular Oscillation/Cyclicity”** (MacNielage & Davis 1999: 6) (the physiological basis for open-closed frames) was originally used by earliest mammals for functions associated with ingestion (chewing, sucking, licking) and then exapted for communication for visual-facial communication (lip smacks, tongue smacks, teeth chatters) (Redican 1975). Physiological support for this evolutionary scenario: the inferior frontal cortex (containing Broca’s area) is used for articulatory control and cortical control of ingestive movements in mammals. (Woolsey 1958). There is also additional clinical support for this evolutionary claim: patients with diverse neurological disorders (including those who lost use of the left inferior frontal cortex) produce “syllabic automatisms” (e.g. ‘dadada’) implying that the syllabic frame is an independent neurological component of speech (MacNielage 1998). However as stated above the unmarked CV structure is both related to physical reasons (the human factor associated with the orientation of the physiology of the vocal tract) and is also efficient from the point of view of the communication factor (the communication factor: i.e. the more clear-cut communicative distinctions produced by phonemes of constriction associated with the orientation of the acoustic medium).

3. **“Rhythmic Close-Open Alternation Frame”** (MacNielage & Davis 1999: 7): this simple rhythmic syllable sequence frame is present in children from their initial babbling stage (7 months) and characterizes babbling (Oller 1980) while CC clusters have not been found in babbling.

4. **Favorings of Co-occurrences of Cs and Vs: “Pure Frames” on “Intra-Cyclical Level”**: Three patterns of coarticulation (similar to assimilation processes in developmental phonology) have been found in infants during the babbling period and in earlier periods (Davis & MacNeilage 1990, 1994, 1995; Zlatic et al. 1997) and in languages (MacNielage et al. 2000) on the intra-cyclical (intra-syllabic) and the inter-cyclical (inter-syllabic) level (MacNielage & Davis 1999: 7–9):

- a. coronal (PHB = apical) consonants /*t, d, n*/ favor front vowels;
- b. dorsal (PHB = posterodorsal) /*k, g*/consonants favor back vowels;
- c. labial consonants /*p, b*/ favor central vowels.

*Explanation according to PHB*: fewer articulatory gestures at the expense of maximum communication. In addition, sequences of phonemes with the same articulators are disfavored unless their juxtaposition is, by virtue of some other factor, mutually beneficial. “Front” versus “back” vowels indicate relative position of antero- and posterodorsum (Davis 1984/1987: 72–83) and the most

common (central) vowel across languages is /a/ (Davis 1984/1987; Stemberger 1992; Tobin 1997a).

Possible evolutionary explanations include: (i) biomechanical constraint on the amount of tongue movement between adjacent C-V sequences for contingencies (a) and (b) above and (ii) oscillation of the mandible with the tongue in a resting position ("Pure Frames") for (c) above. (MacNielage & Davis 1993, 1994)

**5. Favoring of Co-occurrences of Cs in "Inter-cyclical Organization":** Avoidance of repetition of same phoneme. One of the earlier and most frequent functional processes in first language acquisition is reduplication:

*Explanation according to PHB:* the reduplication often comes as a means to avoid more difficult sound combinations and/or to maintain the number of syllables in the word; sequences of phonemes with the same articulators are disfavored unless their juxtaposition is, by virtue of some other factor, mutually beneficial. We also found that newly acquired sounds were often reduplicated as a means of practice or of hypercorrection in the clinical situation.

The repetition of phonemes made by the same articulators and of the same phoneme is disfavored in adult language and across languages in favor of inter-cyclical diversity and has been discussed in many phonological theories and has been called the "Obligatory Contour Principle" (Kenstowicz 1994). MacNielage and Davis (1999:8–9) report on a tendency for the first consonant of a word to have a more anterior articulator active articulator than the second based on research with adult communities (MacNielage & Davis 2000), and among infants (MacNielage et al. 1999), as well as in patterns in dictionary counts across languages (MacNielage et al. 2000) for labial-apical sequences.

Possible evolutionary explanations include: (i) the labial-apical pattern develops as a self-organizational tendency in infants as a means to begin words in an easier way when faced with the interface of the increased functional load of the mental lexicon with the motor system (MacNielage et al. 2000); (ii) beginning with a "pure frame" (labial + central vowel /a/) is easier than beginning with a frame that involves tongue-movement; (iii) therefore the favored labial-apical sequence may have been the evolutionary self-organization response to creating a larger communication set of messages.

*Explanation according to PHB:* yet another instance of maximum communication with minimal effort and the favoring of visual articulators in initial position followed by the apex – the most flexible and sensitive articulator which can combine with the largest number of passive receptors. It is also felicitous from an evolutionary point of view that the easiest active articulators to control – that originally

developed for breathing and eating – can combine with the largest sets of passive receptors to create communicative oppositions and contrasts:

- a. the lower lip with upper lip and the upper teeth;
- b. the apex can extend interdental, to the upper teeth, to the alveolar ridge and post alveolarly to the hard palate;
- c. the posterodorsum can combine with the velum or the soft palate as well as with the uvula.

Furthermore the more distant the active articulators are from each other in the oral tract the greater the communicative contrast that is created acoustically and perceptually when they conjoin with their adjacent passive receptors. This principle also can be applied to the ubiquitous vowel triangle *i-a-u* which is composed of the highest front and highest back vowels combined with the neutral and easiest to produce neutral vowel /a/ which has maximum aperture while the highest front vowel /i/ has maximum lip spread and the highest back vowel /u/ has maximum lip rounding. Thus, the physiology of the phonation of both phonemes of constriction and phonemes of aperture are ideally located to produce maximum communication with minimal effort.

**6. Favorings of phonemes in word initial and word final positions:** Describing and (hopefully) explaining the asymmetry of phonemes in different word position is common to evolutionary phonology and formal and non-formal functional phonological theories such as Natural Phonology (Stampe 1972/1979), Functional Phonology (Boersma 1998), Optimality Theory (Kager 1999; Tobin 2000) and PHB (Tobin 1997a, 2000).

The following quantitative results and principles were obtained from applying PHB to English (Diver 1979), Italian (Davis 1984/1987), and Hebrew (Tobin 1990b,c):

- a. different word (or root) positions have different communicative force and thus affect the favoring and disfavoring of different articulatory and acoustic features and phonemes;
- b. apical articulations are favored in general and in final position in particular;
- c. visual articulations are favored (particularly in word/root initial position);
- d. explosive (mobile/stop) phonemes are favored in initial position;
- e. turbulent (stable/fricative) phonemes are favored in final position.

The following explanations based on the principles of PHB were provided for functional processes in developmental and clinical phonology related to word

position. The data are examples of Israeli Hebrew collected in speech and hearing clinics most of which appeared in Tobin (1997a: chs. 7&8):

1. Final consonant deletion: CVC → CV/(chronology: 2:0 → 3:2):  
 word: *sipúr* → *sipú* 'story'                      *gadól* → *gadó* 'big'  
 syllable: *taxtoním* → *tatoním* 'underwear'    *jaldá* → *jadá* 'girl'  
 syllable and word: *maftéax* → *matéa* 'key' (child with Down's Syndrome)  
                          *parpár* → *papá* 'butterfly' (child with Dyspraxia)

*Explanation according to PHB:* (word and syllable) final position has less communicative force; phonemes of constriction require more articulatory control (are harder to make) than phonemes of aperture but provide clearer communicative distinctions.

2. Devoicing of final consonants: (chronology 2:0 → 3:1):  
 word: *bérez* → *béres* 'faucet'    *od* → *ot* 'more'  
       *jixtón* → *itóf* (+initial, medial and final consonant deletion)  
       (child with Dyspraxia)

*Explanation according to PHB:* additional articulators are disfavored; voiced consonants become unvoiced in word-final (or medial) position: where the communicative force is less important or crucial, the speaker opts to activate one set of articulators rather than two. This may also be related to the phonetic fact that vowels are shorter before voiceless rather than voiced consonants. In initial position with the highest communicative load there is an almost random and relatively free distribution of consonants regarding active articulators (with a slight favoring of visual consonants which are both seen and heard) and with regard to voicing (the number of sets of articulators activated to create the sound). In final position with the lowest communicative load there is a significant skewing favoring apical – the easiest to make – phonemes as well as voiceless ones in obstruent pairs. Word final vowels – which are even easier to make – are very common in languages as well.

The following explanations based on the principles of PHB were provided for the asymmetric distribution of the inflectional system of Old English related to word position:

1. Suffixes are exclusively favored.

*Explanation according to PHB:* initial position (where the communication load is the highest) favors lexical morphemes while grammatical or functional inflectional morphology is reserved for final position (where the communication load is lowest).

2. Suffixes are composed of final vowels -V#, final consonants -C#, or VCV syllables.

*Explanation according to PHB:* Both vowels (phonemes of aperture) and consonants (phonemes of stricture) are employed in the more complex inflectional morphology. Vowels are easier to produce (the human factor), but consonants provide clearer distinctions (the communication factor).

3. Suffixes composed of vowels are favored over suffixes composed of consonants or syllables.

*Explanation according to PHB:* Vowels are easier to produce (the human factor) even though they produce less distinct communicative distinctions especially in unstressed syllables.

4. Suffixes with short vowels are exclusively favored over suffixes with long vowels.

*Explanation according to PHB:* In Old English vowel length (short vs. long) was phonemic. Short vowels are unmarked and easier to produce (the human factor).

5. Final consonants made by the apex of the tongue and the lips are exclusively favored.

*Explanation according to PHB:* Although consonants (phonemes of constriction) are harder to produce than vowels (phonemes of aperture) they provide clearer and more distinct communicative oppositions. The apex of the tongue and the lower lip are the most flexible, sensitive and the easiest to control of all the active articulators (the human factor).

6. Nasals and other sonorants (including vowels) are favored over stops and fricatives.

*Explanation according to PHB:* Although obstruents allow for voiceless (one set of oral articulators) and voiced (two sets of articulators: oral + vocal folds) while sonorants are composed of two (oral + vocal folds) and nasals of three (oral + vocal folds + uvular) sets of articulators that are more difficult to produce (the human factor) they provide more acoustic information and more distinct oppositions (the communication factor).

MacNielage & Davis (1999:9–16) provide similar data for the beginnings and ends of words from an evolutionary point of view:

**1. Preference for C-V syllables:** Preferences for initial C and final V has been recorded across languages for words (called “sections” by Bell & Hooper 1978:9):

Sections must begin with a consonant in about 20 to 40 percent of the world’s languages (e.g. Hottentot). Sections must end in a vowel in about 10 to 25 percent



of the world's languages (e.g. Luganda). There are virtually no languages whose sections obligatorily begin with a vowel and end with a consonant.

PHB explanations, possible evolutionary explanations, and evidence in developmental phonology are provided above under (1) Favoring of CV syllables: "Frames of syllabic C-V alternations", (2) "Mandibular Oscillation/Cyclicity", (3) "Rhythmic Close-Open Alternation Frame", (4) Favorings of Co-occurrences of Cs and Vs: "Pure Frames" on "Intra-Cyclical Level".

The C-V-C  $\rightarrow$  CV tendency is further supported by the frequent functional process of "Final Consonant Deletion" in children discussed above and the preference for C-V-(C) syllable in adult language through dictionary counts is supported by Quinlan (1992).

Studies of infant babbling has also shown both CV and VC trends (Davis & MacNielage 1995, Davis et al. 2000).

Additional Possible Evolutionary Explanation (MacNielage & Davis 1999: 10):

We believe that in terms of movement, the beginning and end preferences in infant babbling and early speech have something to do with contingencies involved in producing vocalizations in the context of the rest position of the mammalian vocal apparatus in general. The typical mammalian vocalization is made with the mouth open – usually with a single mouth opening. Having the mouth open during phonation has obviously evolved to optimize strength of the signal. Phonation with a closed mouth results in decrease in signal amplitude due to tissue absorption. Therefore, the mouth opens in the context of initiation of phonation, and closes again in the context of cessation of phonation. Presumably in the typical mammal the achievement of this coordination of phonation with opening is not learned. Some information about the temporal coordination with articulation in other mammals and particularly other primates is needed in order for us to understand the phylogenic background of word asymmetry.

In the absence of any phylogenic knowledge regarding the coordination of movements of the articulatory system with phonation, our aim at present is twofold. One is to emphasize the remarkable coincidence between tendencies towards asymmetries in the edges of words in languages and the predominant asymmetry of babbling episodes. The other is to note that the infant asymmetries do not appear to be learned. Their ending patterns do not match those of the ambient language, and their beginning patterns show no tendency to converge on the ambient language patterns across time, judged by the frequency of occurrence.

1. Preferred C terminations: Voiceless, fricatives, nasals:

The three major tendencies found in final C position -C# in languages (found in PHB as well as other theories) (MacNielage & Davis 1999: 12):

- a. tendency towards voiceless consonants (Menn 1983);
- b. a tendency for fricatives to be more common in final position (Hock 1986)

These tendencies were supported for babbling as well (Redford, MacNielage & Davis 1997) along with:

- c. a tendency for more nasal consonants in final position in babbling.
2. There are also parallel prosodic aspects of utterance termination found for adults and in babbling:
- a. simple declarative sentence is the most basic grammatical form in language:  
 “Most human languages for which phonetic data exist signal the end of a simple declarative sentence with a fundamental frequency contour that abruptly falls, with a concomitant drop in amplitude.” (Lieberman 1984: 19)
  - b. Levitt (1993) and Whalen et al. (1991) report a terminal fall in fundamental frequency in babbling (corresponding to the rate of vocal fold vibration) in reduplicative babbling.
  - c. Davis et al. (2000) observe a terminal fall in intensity (amplitude) in the second of two-syllable babbled utterances.
  - d. Bolinger (1989: 11) reports that this rising-falling pattern is found in the infant cry as the earliest form of vocalization and was later conventionalized as the most basic intonation pattern in languages of the world.
  - e. Enbe et al. (2006) discuss this prosodic pattern as the easiest to produce which produces the most basic communicative contrast as a prime example of the striving for maximum communication with minimal effort.

Possible evolutionary explanation: “Terminal Energy Decrease” (MacNielage & Davis 1999: 12–13):

We have suggested a single explanation for all of these phenomena in infant vocalization. An utterance-terminal decrease in energy (TED) in all three components of the production system – respiratory, phonatory and articulatory – associated with cessation of movement for the vocal episode, may be responsible for all the effects (Redford et al. 1997). The suggested causality for the various effects may be as follows. The first two effects involve the articulatory component, the third and fourth effects probably involve both the phonatory and the respiratory system, and the fifth effect involves the respiratory system alone:

1. More fricatives – decrease in the amplitude of mandibular closing phase resulting in less than the total vocal tract occlusion associated with stop consonants, thereby allowing some airflow through the constricted vocal tract. (The favoring of mobile (plosive) sounds in initial position and stable (turbulent) sounds in final position) [Y.T.]

2. More nasals – decrease in elevation of the previously static soft palate (uvular?) [Y.T.] position, allowing nasalization. (Nasals are complex – involve the use of three sets of articulators but are natural within the physiology of the vocal tract.) [Y.T.]
3. More voiceless sounds – decrease in sub-glottal pressure and/or vocal fold tension, producing sub-optimal conditions for voicing (favoring of fewer sets of articulators). [Y.T.]
4. Lower pitch (rate of vocal fold vibration) – As above, except conditions for voicing continue to exist (preference for rising-falling prosodic contours in babbling, language acquisition and in sentence intonation (Enbe et al. 2006). [Y.T.]
5. Lower intensity – decrease in sub-glottal pressure.

The implication of the TED hypothesis is that these five effects may be the natural resultants of a process of terminating vocalization, including, in the case of speech, frame production. The prosodic effects – decrease in fundamental frequency and intensity – are present at the level of termination of simple declarative sentences. The consonant de-voicing and occurrence of friction are also found often in languages, but at the termination of words. This is of particular interest because in adult speech the ends of words are usually not the ends of utterances. Most words are embedded within continuous speech. Consequently any terminal decrease in energy which might be associated with the prosodic effects because they remain utterance-final in modern speech, are not associated with word final sounds because they are usually not utterance-final. This suggests that final de-voicing and frication, might, in some instances at least, have arisen in the single word stage of language evolution. These patterns were then retained in a subsequent stage of multi-word speech, even though the terminal bio-mechanical contingencies that originally produced them are no longer present. ....

... If the use of nasals in suffixes proves to be widespread, we may eventually be able to postulate a phonetic basis for this aspect of suffixal sound structure originating at the single word stage of evolution. (The interface of the “naturalness” of nasals in phonetic environments with a decrease in energy.) [Y.T.]

Tobin (1997a: 317 fn. 9) states: ...the production of nasals involves three sets of articulators: nasals are all voiced (+1), oral stops (+2), produced with the uvula (+3), which lowers to allow most of the air to enter the nasal passage but leaves enough air in the oral passage to determine which set of active oral articulators is being used: bilabial *m*, apical *n*, or dorsal *ŋ*. Despite the fact that nasal are complex sounds articulatorily, they are also natural sounds. As we know, the vocal and nasal tracts were originally designed for eating and breathing, respectively. Talking came later and was superimposed on the same musculature...

Therefore it may very well be that the uvula (the third articulator in the production of nasals) might even be more active while producing relatively more “unnatural” oral sounds rather than the more natural nasal sounds.

(pc Bob de Jonge)

The TED hypothesis as well as all the evolutionary hypotheses discussed above appear to conform with the parameters and principles of the theory of PHB indicating that different approaches can account for phonological and phonotactic phenomena if they share a functionalist, human, and communication oriented point of view.

## 7. Summary and conclusions

Major principles of the theory of phonology as human behavior for phonological analysis [and for developmental and clinical phonology] which have now been applied to evolutionary phonology:

1. We begin with the phonetic observations, articulatory and acoustic, within which there are no observable units [child language inventory and clinical intake].
2. By means of the communication orientation we can establish the number of distinctive units of a language [as found in a child or patient].
3. Consideration of the acoustic and physiological characteristics of the units [and the ones found in a child and patient] suggests a variety of characterizations.
4. In choosing among these characterizations, it is apparent that the characteristics of the units must be of such a kind that the human user can learn them [both in normal developmental and pathological language acquisition].
5. We do not know in advance, deductively, in exactly what way the human factor will interact with the communication and other factors.
6. Phonotactic skewings in language (diachronic and synchronic) [and in developmental and pathological data] reflect the learning process of the speakers [including children and clinical patients].
7. This skewing viewed consistently with the human factor against the background of the other factors of communication, acoustics and physiology informs us of the characteristics we are confronted by.
8. Phonology is not random but motivated; the frequencies of the phonological units and the ways they combine are determined both by their phonetic make-up and by the speaker's [child's or patient's] exploitation of – or coping with – that make-up in the act of communication.

9. Gestures enhancing communicative distinctiveness are favored and articulatorily more difficult gestures are disfavored.
10. There is a conflict between the communication and the human factors in the search for maximum communication with minimal effort in the diachronic development of a language and its current synchronic state.
11. This conflict is even more keenly felt in language acquisition where functional errors and processes may be observed and even more so in the clinic where developmental and pathological errors and processes show an even more extreme conflict between the communication and human factors.
12. The theory of phonology as human behavior can explain the connection and interrelationship between the phylogeny, ontogeny and pathology of the development of sound systems in human language in a principled way.

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# Phonology as human behavior

## The prosody of normal and pathological speech of Buenos Aires Spanish

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This study compares and contrasts the intonation patterns of Buenos Aires Spanish in normal speech (NS) and pathological speech (PS) (stuttering, dysarthria, acquired hearing impaired, dysphonia and developmental speech disorders) in three age groups equally divided by gender (5–8, 18–50, 51–75) and in three different sentence types: declarative, wh-question and exclamatory. The data were analysed using the Autosegmental-Metrical model and the ToBI system adopted for Argentine Spanish. The results were explained according to the principles of the theory of Phonology as Human Behavior. The results show that both NS and PS maintain the contrastive function of intonation, however, we found the largest difference between both groups in the unmarked declarative sentences and the more marked the sentence the fewer differences were found.

**Keywords:** prosody; Buenos Aires Spanish; normal speech; pathological speech; Phonology as Human Behavior

### 1. Introduction

The goal of this research is to compare and contrast the intonation patterns of Buenos Aires Spanish (BAS) normal speech (NS) with the patterns of pathological speech (PS). The speech disorders we chose representing different central or peripheral neurological damage known to alter prosody were: (a) stuttering (St), (b) neurological disorders (ND), (c) acquired hearing impairment (H), (d) dysphonia (D) and (e) developmental language disorders (DLD). The analysis of the data was obtained using the notation of Autosegmental-Metrical Theory (AM-Theory) (Pierrehumbert 1980); the ToBI system (Beckman & Ayers 1993/1997; Beckman et al. 2002), and the ToBI adaptation for Argentine Spanish in particular – called ‘ToBI ampliado’ (ToBI-A) (‘*wider ToBI*’) (Gurlekian et al. 2001b; 2004). The results of the present study have been analysed according to the theory of Phonology as Human Behavior (PHB) (Diver 1979, 1995; Tobin 1995, 1997, 1988, 1990).

2. Experimental design

The participants of this study were 90 native speakers of BAS: 72 NS speakers divided into 3 age groups: (a) children (5–8), (b) adults (18–50) and (c) adults (51–75), 12 males/ 12 females per group, and 18 PS speakers divided in five groups according to the speech pathology: (a) developmental language disorders (DLD), (b) stuttering (St), (c) acquired hearing loss (H), (d) dysphonia (D), (e) dysarthria-resulting from neurological disorders after brain damage-(ND) (See Table 1).

Table 1. NS and PS distribution according to gender and age (m: males, f: females)

Speakers		children (5–8)	adults (18–50)	adults (51–75)
BAS NS: 72		12m/12f	12m/12f	12m/12f
BAS PS: 18	DLD: 5	2m/3f	–	–
	St: 5	1m	2m	2f
	H: 3	–	1m	1m/1f
	D: 3	–	1f	1m/1f
	ND: 2	–	–	1m/1f
Totals: 90		30	28	32

Each speaker repeated three typical sentences for BAS (declarative, wh-questions and exclamatory). For this study, the repetition task was chosen because: (a) the tasks of reading aloud and spontaneous speech are difficult for speakers of PS; (b) the children in our study may not have learned to read or read fluently and (c) PS speakers may have trouble reading and speaking fluently. In addition, a pilot study (Enbe et al. 2006) showed that specialists in speech (speech pathologists, musicians and teachers) did not imitate the prosodic patterns in repetition tasks when they heard the sentences one or two consecutive times and we assume that naïve speakers will function in the same way.

The participants of this study were native monolingual, middle-class speakers of BAS living in Buenos Aires centre and suburbs; and have been selected according to the following criteria:

1. NS speakers were examined to have normal hearing and no physiological disorders in vocal folds and vocal tract and were non-smokers (smoking affects fundamental frequency).
2. PS speakers have a neurological or otorhinolaryngological disorder that alters speech. Each speaker had a medical examination and was classified according to the clinical diagnosis. The speech disorder was determined by a speech-language therapist.

In both NS and PS groups, adolescents (9–17) were not included because of hormonal changes affecting the fundamental frequency.

## 2.1 Corpus

The corpus was composed of the following three sentences: (a) declarative: *El agua hierve* ('The water boils.') (b) wh-question: *Dónde vive el nene?* ('Where does the boy live?') and (c) exclamatory: *¡Gol!* ('Goal!'). The sentences contain only voiced consonants and vowels to provide a complete contour of fundamental frequency.

## 3. Procedure

Each subject uttered the sentences in a repetition task. The utterances were recorded in a partially isolated acoustic room, using AKG acoustics D50S dynamic vocal microphone on a Mini disc Sony MZ-R37. Waveforms were digitalized and stored on a hard disc and segmented to 16 bits using a sampling frequency of 44 kHz. Acoustic analysis was made through the 'Anagraf' speech program (Gurlekian 1997) and each utterance was labelled according to four descriptive tiers (a) orthographic; (b) tonal; (c) phonemic and (d) breaks. The phonemic transcription was performed in the Argentinean Spanish SAMPA adaptation (Gurlekian et al. 2001a). We used the ERB scale (Equivalent Rectangular Bandwidth) rate psycho-acoustic level to characterize the fundamental frequency values.

## 4. Results and discussion

### 4.1 Declarative sentences

In the unmarked declarative sentences, we found that BAS NS conserve the classic Spanish prosodic patterns described by Navarro Tomás (1944/1974): (1) Type 1: 'rising-falling contour (subject)/falling contour (predicate)' ( $H^*L-/L^*L-L\%$ ), the easiest and the earliest of all prosodic patterns to be acquired which provides the most basic communicative contrasts (Bolinger 1989). (2) Type 2: 'high-rising contour (subject)/falling contour (predicate)' ( $H^*H-/L^*L-L\%$ ) the more complex and marked contour that is considered to be more polite and prestigious. In both patterns, the subject has the first pitch accent with the highest tone (we label HiF0 -high F0- in the figures) while the second pitch accent appears in a low tone ( $L^*$ ) in the predicate. For both classic types, the sentence is divided into two melodic groups (subject-predicate) according to syntactic and semantic criteria. Our research has shown that: (1) speakers of BAS (NS-PS) generally conserve these two classic patterns; (2) the greatest variation was found for PS speakers due to their speech disorders; (3) there is also variation for age and gender for each sentence type for all speakers (Enbe et al. 2006).

More specifically, the analysis of the declarative sentence *el agua hierve* ('the water boils'), indicate that 93% of NS and 50–100% of PS speakers divide the

sentence into two melodic groups: the **subject** *el agua* ('the water') and the **predicate** *hierve* ('boils') (see Table 2). Only a minority of NS speakers produces the sentence with only one melodic group while in PS group, the speakers prefer three to four melodic groups depending on the speech disorder.

Table 2. BAS declarative sentences: melodic group distribution in NS and PS

Speakers		One melodic group	Two melodic groups	Three melodic groups	Four melodic groups
BAS NS: 72		7% 5 tokens	93% 67 tokens	–	–
BAS PS: 18	DLD: 5	–	100% 5 tokens	–	–
	St: 5	–	60% 3 tokens	20% 1 token	20% 1 token
	H: 3	–	100% 3 tokens	–	–
	D: 3	–	100% 3 tokens	–	–
	ND: 2	–	50% 1 token	50% 1 token	–

In declarative sentences, we also found that the majority of BAS NS and 20%–100% of PS (see Table 3) place the highest pitch accent of the sentence on the noun-subject *agua*. The vast majority of NS and 40%–100% of PS (see Table 3) have a low pitch accent on the predicate *hierve*. For the subject, we also found that ND and St show more than one pitch accent in the subject (they stressed the article *el* ('the')). Regarding the predicate, we found that the speakers of PS may place the highest pitch accent on the verb and one speaker with stuttering adds two contiguous pitch accents on the diphthong ('j'erBe).

Table 3. Pitch accent distribution in BAS declarative sentences in NS and PS\*

Speakers		Subject <i>el agua</i> ('the water')				Predicate <i>hierve</i> ('boils')			
		Highest pitch accent	High pitch accent	Low pitch accent	Add pitch accents	Highest pitch accent	High pitch accent	Low pitch accent	Add pitch accents
BAS NS: 72		93% 67 tokens	3% 2 tokens	4% 3 tokens	–	1% 1 token	3% 2 tokens	96% 69 tokens	–
BAS PS: 18	DLD: 5	20% 1 token	60% 3 tokens	20% 1 tokens	–	60% 3 tokens	–	40% 2 tokens	–
	St: 5	56% 5 tokens	–	–	44% 4 tokens	–	28% 2 tokens	44% 3 tokens	28% 2 tokens
	H: 3	100% 3 tokens	–	–	–	–	–	100% 3 tokens	–
	D: 3	67% 2 tokens	–	33% 1 token	–	–	–	100% 3 tokens	–
	ND: 2	33% 1 token	33% 1 token	–	34% 1 token	50% 1 token	–	50% 1 token	–

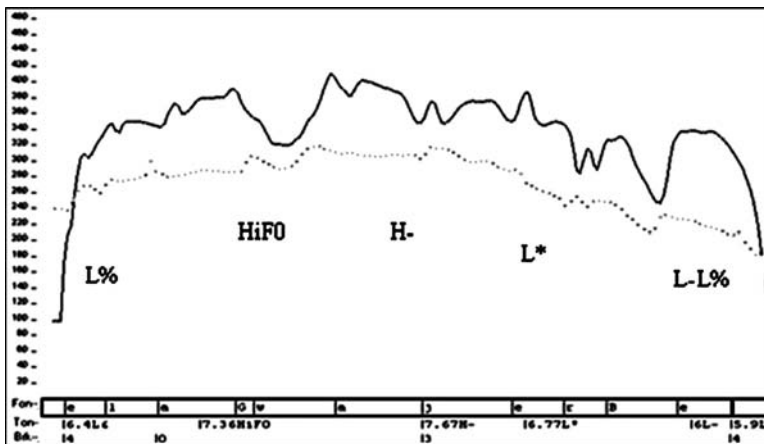
\*percentage values of PS are related to the quantity of tokens for each sentence. Therefore, in some speech disorders such as St and ND, the speakers add random pitch accents and then the total number of tokens changed.

In the terminal contour of declarative sentences, almost all of NS speakers and the majority of PS speakers end the sentence with a falling tonal contour similar to the classical patterns (Navarro Tomás 1944/1974; Vidal de Battini 1964; Fontanella de Weinberg 1966, 1980; Kvavik & Olsen 1974; Canellada & Kuhlman Madsen 1987; Quilis 1993; Prieto 1998; Sosa 1999; Beckman et al. 2002; Colantoni & Gurlekian 2002, 2004; Díaz Campos & Mc Gory 2002; Barjam 2004). However, a minority of PS speakers shows other terminal contour preferences (“rising-falling” or “rising”) depending on the speech disorder (see Table 4).

**Table 4.** BAS declarative sentences: Terminal contour distribution in NS and PS

Speakers		Falling terminal contour	Rising-falling terminal contour	Rising terminal contour
BAS NS: 72		98% 70 tokens	2% 2 tokens	–
BAS PS: 18	DLD: 5	80% 4 tokens	20% 1 token	–
	St: 5	100% 5 tokens	–	–
	H: 3	67% 2 tokens	–	33% 1 token
	D: 3	100% 3 tokens	–	–
	ND: 2	100% 2 tokens	–	–

In Figures 1 and 2, we compare and contrast the prosodic patterns of the declarative sentence *el agua hierve* (‘the water boils’) uttered by two 7 year old boys one from each group. The NS boy (Figure 1) produces the classic pattern type 2. The PS boy (Figure 2) with DLD produces a high pitch accent in the subject but places the highest pitch accent of the sentence in the verb. Both children divide the sentence into two melodic groups by tonal change and have a falling terminal contour.



**Figure 1.** Declarative sentence similar to the classic contour pattern Type 2 uttered by a NS male aged 7



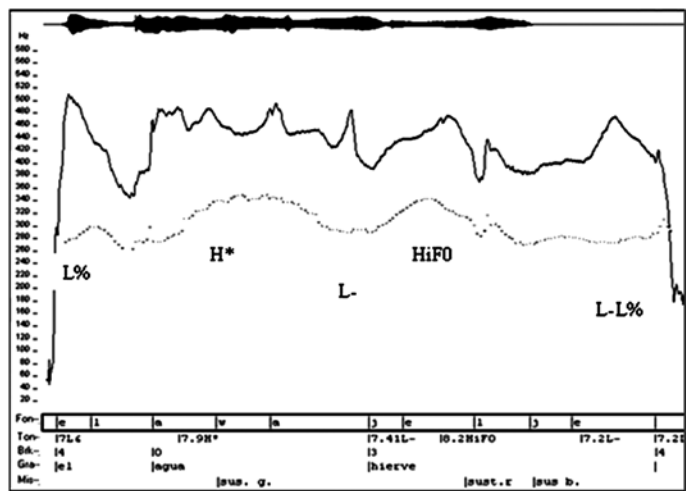


Figure 2. Declarative sentence different from the classic patterns uttered by a PS male aged 7 with developmental language disorder

4.2 Wh-questions

We have considered wh-questions to be more marked than declarative sentences semantically, syntactically and pragmatically for the following reasons: (1) Wh-questions have an obligatory interrogative marker or ‘wh-word’ that always takes the highest pitch accent. (2) There is a change in word order (Wh-word-V- S) rather than the unmarked S-V-O of declaratives.

The literature on Spanish prosody (beginning with Navarro Tomás (1944/1974) followed by Alcoba & Murillo 1998; Sosa 2003; Barjam 2004) has shown a basic similarity between declaratives and wh-interrogatives: i.e. the highest tone in the first part of the sentence followed by a falling tonal contour. In addition, Navarro Tomás 1944; Quilis 1993 and Sosa 2003 describe at least three different terminal contour for (the marked) wh-questions determined by sociolinguistic and pragmatic context: (1) a falling (‘unmarked’), (2) a rising (‘polite’) and (3) a rising-falling (‘emphatic’) patterns following the last low pitch accent of the sentence. One would expect, therefore, that there would be more variation among speakers of both groups for the more complex marked wh-questions than for the unmarked declarative sentences which is not totally supported by our data. Our findings indicate that in the marked wh-question the range of variability for the NS speakers is greater than in the unmarked declarative sentences. We can compare and contrast the NS speakers with the PS speakers in the following ways bearing in mind that there are fewer PS speakers in general (72 NS versus 18 PS) and the latter were chosen by the criteria of their syndromes rather than for gender and age. However, we have at least three pairs of subjects of both genders for each age group.

Our first finding is that BAS NS-PS – based on the sentence: *Dónde vive el nene?* ('Where does the boy live?') – differs from the classic patterns: i.e. (a) the highest pitch accent is on the wh-word (like the classical), but (b) there is also a tendency to place a high pitch accent on the verb and on the subject (unlike the classical), and (c) to end the sentence with a rising terminal contour after a high pitch accent (unlike the classical) (Enbe et al. 2006). Despite the fact that we have found the greatest variation between the groups to be motivated by pathological factors, the results in wh-questions show more similarities than differences between the NS-PS speakers (see Table 5): the majority of NS and PS speakers divide the sentence into two melodic groups according to syntactic and semantic criteria. We also found that a minority of NS and PS speakers produces only one melodic group and some PS speakers also produce three melodic groups per sentence.

Table 5. Melodic group distribution of BAS wh-questions in NS and PS

Speakers		One melodic group	Two melodic groups	Three melodic groups
BAS NS: 72		20% 14 tokens	80% 58 tokens	–
BAS PS: 18	DLD: 5	60% 3 tokens	40% 2 tokens	–
	St: 5	20% 1 token	40% 2 tokens	40% 2 tokens
	H: 3	–	100% 3 tokens	–
	D: 3	33% 1 tokens	67% 2 tokens	–
	ND: 2	–	50% 1 token	50% 1 token

Regarding the **first pitch accent** in the wh-word, the majority of NS and PS speakers (see Table 6) resembles the classical model with the highest pitch accent in the wh-word while a minority of NS and PS prefers a high pitch accent in this position. None of the NS-PS speakers shows a low pitch accent in the wh-word.

Table 6. Pitch accent preferences in the first position of BAS wh-questions (wh-word)

Speakers		Highest pitch accent	High pitch accent
BAS NS: 72		71% 51 tokens	29% 21 tokens
BAS PS: 18	DLD: 5	100% 5 tokens	–
	St: 5	80% 4 tokens	20% 1 token
	H: 3	67% 2 tokens	33% 1 token
	D: 3	67% 2 tokens	33% 1 token
	ND: 2	50% 1 token	50% 1 token

The **second pitch accent** – the verb (*vive* 'lives') – has a low tone in the classical Spanish model. For BAS, we found that the majority of NS and PS speakers prefers a high tone on the verb (see Table 7) while a minority of NS and PS produces the highest pitch accent in this position. Only a few of both, NS and PS (one case

of DLD) produces the classic low tone. In addition, one of the stutterers repeated the first syllable of the verb retaining the high pitch accent (*'vi 'vive*).

Table 7. Pitch accent preferences in the verb in BAS wh-questions

Speakers	Highest pitch accent	High pitch accent	Low pitch accent	Bitonal pitch accents (L+H*)	Add pitch accents
BAS NS: 72	26% 19 tokens	54% 37 tokens	19% 14 tokens	1% 2 tokens	–
BAS PS: 18	DLD: 5	–	80% 4 tokens	20% 1 token	–
	St: 5	16% 1 token	67% 3 tokens	–	17% 1 token
	H: 3	33% 1 token	67% 2 tokens	–	–
	D: 3	33% 1 token	67% 2 tokens	–	–
	ND: 2	–	100% 2 tokens	–	–

The **third pitch accent** – on the tonic syllable of the subject noun (*'nene'*-*'boy'*) – has a low tone in the classical Spanish contour. Our data significantly differ from the classic description because the majority of NS and 33%–100% of PS (see Table 8) produces a high tone on the subject. Only a minority of NS and PS prefers the classic low tone. PS speakers show slight differences from NS speakers: they produce the highest pitch accent of the sentence in this position and also add pitch accents to function words stressing the article *el* (*'the'*)).

Table 8. Pitch accent preferences in the third position of the BAS wh-questions (subject noun)

Speakers	Highest pitch accent	High pitch accent	Low pitch accent	Bitonal pitch accents (L+H*/L*+H)	Add pitch accents
BAS NS: 72	1% 1 token	79% 57 tokens	17% 12 tokens	1% 2 tokens	–
BAS PS: 18	DLD: 5	–	80% 4 tokens	20% 1 token	–
	St: 5	–	71% 5 tokens	–	29% 2 tokens
	H: 3	–	100% 3 tokens	–	–
	D: 3	–	67% 2 tokens	33% 1 token	–
	ND: 2	33% 1 token	33% 1 token	–	33% 1 token

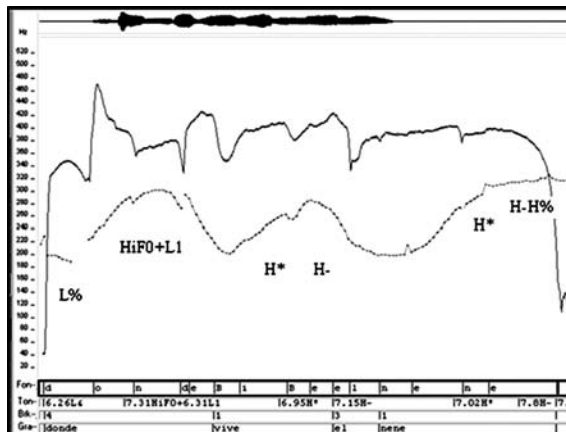
In our data, we also found similarities in the terminal contour preferences of the wh-questions for both groups. Based on the three terminal prosodic patterns described for the classic Spanish pattern (Navarro Tomás 1944/1974; Quilis 1993 and Sosa 2003) BAS shows a preference for the most marked polite-prestigious high terminal pattern. The three classic terminal contour descriptions are: (a) the falling “unmarked” (L–L%), (b) the rising “polite” (H–H%) and (c) the rising-falling “emphatic” (H–L%) (see Table 9).

**Table 9.** BAS wh-questions: Terminal contour distribution in NS and PS

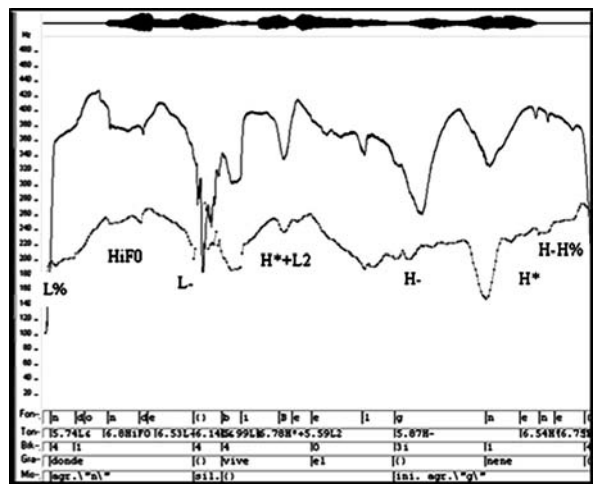
Speakers		Falling terminal contour	Rising-falling terminal contour	Rising terminal contour
BAS NS: 72		8% 6 tokens	28% 20 tokens	64% 46 tokens
BAS PS: 18	DLD: 5	20% 1 token	–	80% 4 tokens
	St: 5	20% 1 token	80% 4 tokens	–
	H: 3	–	67% 2 tokens	33% 1 token
	D: 3	–	33% 1 token	67% 2 tokens
	ND: 2	50% 1 token	50% 1 token	–

The data show that the majority of BAS NS has a ‘polite’ classic contour (H–H%). A minority of NS shows the classic ‘emphatic’ terminal contour (H–L%) or the classic ‘unmarked’ prosodic contour (L–L%). PS speakers have different terminal contour preferences.

Figures 3 and 4 represent two BAS speakers producing the sentence: *Dónde vive el nene?* (‘Where does the boy live?’). Figure 3 was uttered by a 27 year old NS woman whose tonal contour shows three high pitch accents (wh-word, verb and noun) with the highest tone in the wh-word and divides the sentence into two melodic groups produced by tonal change. Figure 4 was uttered by a 36 year old PS woman who stutters. She produces the highest pitch accent in the wh-word, and high pitch accents in the verb and noun – similar to the NS woman – but divides the sentence into three melodic groups and adds segments to the wh-word /*donde*/ → /*ndonde*/ and the noun phrase /*elnene*/ → /*elgnene*/ (not found in NS). In both utterances, the speakers end the sentence with a high terminal contour.



**Figure 3.** Wh-question *Dónde vive el nene?* (‘Where does the boy live?’) uttered by a NS woman (27). The sentence is divided into two melodic groups separated by tonal change, with the highest pitch accent in the wh-word, and high pitch accents in the verb and noun



**Figure 4.** PS woman (36) who stutters uttered the sentence *Dónde vive el nene?* ('Where does the boy live?'). The sentence is divided into three melodic groups separated by pauses and tonal change with the highest pitch accent in the *wh*-word, and high pitch accents in the verb and noun

In conclusion, our data of BAS *wh*-questions show that in both groups (NS-PS) the speakers present similar pitch accent and terminal contour preferences. The reason may be that the more difficult and marked the sentence; the more people will focus on the same marked features: the *wh*-word, inverted verb and subject, and final interrogative tonal contour.

4.3 Exclamatory sentences

The classic studies of Spanish prosody for exclamatory sentences – including the more recent AM studies using the ToBI system – are few and far between, and those that do exist only provide minimal descriptions of this kind of sentence. The perceptual findings of Navarro Tomás (1944/1974), supported by other experimental studies of Spanish (Canellada and Khulmann-Madsen 1987 and Quilis 1993) show at least two different terminal contour patterns of exclamatory sentences: (1) the unmarked 'high-falling' contour (H\*L-L%) and (2) the marked 'high-rising' (H\*H-H%) pattern.

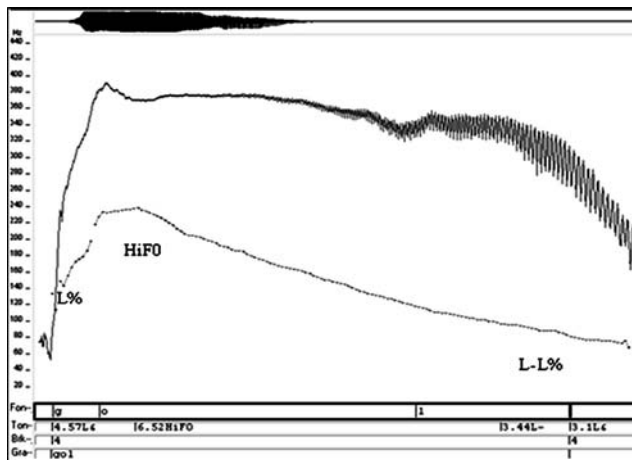
In the present study, using the one-word sentence: *Go!* ('goal'), we found variations between both groups (NS-PS). Almost all speakers of NS (98%) prefer the classic 'high-falling' contour with a high pitch accent in the stressed syllable followed by a lower terminal contour. Some PS speakers have a similar contour pattern than NS or differ from them producing a lower pitch accent (20% of St,

33% of D and 60% of DLD) or having a high terminal contour (20% of St and 80% of DLD) (see Table 10).

**Table 10.** BAS exclamatory sentences in NS and PS

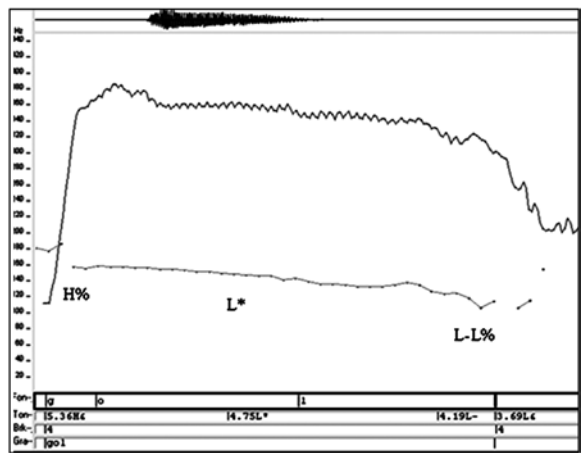
Speakers		High-falling contour	High-rising contour	Different contour
BAS NS: 72		98% 71 tokens	28% 20 tokens	–
BAS PS: 18	DLD: 5	20% 1 token	–	80% 4 tokens
	St: 5	60% 3 tokens	–	40% 2 tokens
	H: 3	100% 3 tokens	–	–
	D: 3	67% 2 tokens	–	33% 1 token
	ND: 2	100% 2 tokens	–	–

Figures 5 and 6 represent the exclamatory sentence *Gol!* ('goal') uttered by two 64 year old men. Figure 5 shows a sentence uttered by a NS speaker. The highest pitch accent is followed by a falling terminal contour (the classic 'unmarked' pattern). In contrast, the pattern of Figure 6, uttered by a PS speaker with unilateral vocal fold paralysis, shows less tonal change and has a lower pitch accent following by a falling contour pattern (not found in NS).



**Figure 5.** Exclamatory sentence 'Gol' ('Goal') uttered by a NS man (64) using the classic unmarked "high-falling" pattern

This strong preference for the unmarked classic high-falling contour for both groups may be because we analysed a one-word sentence, but this preference has been shown to exist because the rising-falling tonal contour is the easiest to produce and the one which Bolinger (1989) referred to as the most natural pattern,



**Figure 6.** Exclamatory sentence ‘Gol’ (‘Goal’) uttered by a PS man (64) with unilateral vocal fold paralysis. The contour pattern is less varied with a lower pitch accent and a falling terminal contour

acquired at the earliest age and the most universal and frequent across languages. In short, for this simple exclamatory sentence, we found variations in the PS group (DLD, St and D) regarding the pitch accent and terminal contour preferences compared with the NS group.

**5. Analysis of the data according to the theory of Phonology as Human Behavior (PHB)**

The theory of PHB can explain the preferences for the most basic, easiest to produce, unmarked high-falling tonal contours in the classical Spanish employing the fundamental axiom underlying the theory that language represents a compromise between the striving for maximum communication with minimal effort (Enbe et al. 2006). However, in our BAS NS-PS data we found that speakers have a strong preference for the more difficult, complex, marked high prosodic contours both in simple unmarked declarative sentences (Subject-Verb) as well as in the more complex marked wh-questions. Acoustically and perceptually, these marked tonal contours produce more clear-cut prosodic contrasts, but they also require more effort on the part of the encoder and the decoder. Only in the exclamatory sentence which is marked pragmatically – but was syntactically and semantically the most simple sentence in the corpus – the majority of our BAS NS (98%) and PS (60–100%) speakers preferred to exert minimal effort using the unmarked prosodic contour.

PS speakers consistently show more variation than NS speakers. The most variation (30–60%) is found in the unmarked declarative sentence where PS speakers show different pitch accent preferences in almost all of the pathologies. For **the first pitch accent** (*subject noun*): (a) 60% of DLD and 33% of ND prefer a high tone (NS mean is 3%–6%), (b) 33% of D and 20% of DLD prefer a low tone (NS mean is 5%–13%) and 44% of St add more pitch accents (not found in NS). For **the second pitch accent** (*the verb*): (a) 50% of ND and 60% of DLD produce the highest tone of the sentence (NS mean is 1%), 28% of St add two contiguous pitch accents in the verb (*‘jërBe*) (not found in NS). For the terminal contour and melodic group division of declarative sentences, NS-PS speakers have minimal differences.

In the exclamatory sentences, a minority of PS speakers (20% of St, 33% of D and 60% of DLD) prefer a low pitch accent (not found in NS). Regarding the terminal contour of exclamatory sentences, 20% of St and 80% of DLD produce a higher boundary tone after the falling terminal contour (L–H%) (not found in NS).

In the most marked wh-questions, the data indicate that the difference between NS and PS speakers is minimal: in almost all cases (BAS NS-PS) pitch accent, terminal contour and melodic group division show similar preferences. However, ND and St speakers show more variations than NS speakers: (a) they change the tone preference of the third pitch accent (the subject noun), (b) they add pitch accents to function words and (c) they divide the sentence into more than two melodic groups. The reason for the similarities between NS-PS speakers in wh-questions may be because all speakers are investing more effort in the same way to produce the more complex prosodic patterns for the marked wh-question.

## 6. Prosody and the theory of Phonology as Human Behavior

The basic principles of the theory of PHB were first adapted and applied to suprasegmental features in order to obtain preliminary principles on how the prosodic features act in the communication process for both typical or normal speech (NS) and atypical or pathological speech (PS) of BAS (Enbe 2003, 2009a–c). In that study, the suprasegmental features of intonation and rhythm in one simple declarative sentence “*la abuela le da un helado a la nena*” (S- IO pron- V- DO- PP) (‘the grandmother gives an ice-cream to the little girl’) were analyzed by using six representative female speakers of BAS: two NS speakers and four PS speakers. The NS speakers were two teachers of primary school (25 and 30 years old respectively). The representative speakers of speech disorders were two girls aged eight – one girl with stuttering and one girl with hearing impairment – and two women aged 52 and 70 respectively with dysarthria as consequence of neurological injury. The data were analyzed in the framework of AM theory by using the adaptation



of the ToBI labeling for Argentinian Spanish (Gurlekian et al. 2001b, 2004). Intonation was characterized by its components of melodic groups, pitch accents, phrase accents and juncture tones. Rhythm was analyzed by the measure of the duration of pitch accents and pauses.

### 6.1 The components of prosody and the theory of PHB

The prosodic components of intonation and rhythm were defined and analyzed in the framework of the theory of PHB as follows (Enbe 2009a: 55–62):

- a. **Melodic groups:** The melodic group is the minimum part of the discourse with a determined musical form, being at the same time a significant part in itself within the whole sense of the sentence. Each melodic group is recognized for the presence of a pause or a tonal change that segments the utterance (Navarro Tomás 1944/1974).

**PHB explanation:** the division of melodic groups helps the speaker to convey a message. The encoder structures the utterance in parts (human factor) in order to obtain maximum communication (communication factor).

- b. **Pitch accents:** The pitch accent is a local feature of pitch contour associated with a prominence in the utterance (Ladd 1996).

**PHB explanation:** the speaker has a natural muscular activity to produce speech and he has learned to control his muscles to produce speech in a natural way with stressed and unstressed syllables (human factor). In a compromise between the human factor and the communication factor, the speaker chooses to stress those syllables in tonic /non-tonic oppositions to produce more efficient contrastive oppositions to favor maximum communication.

- c. **Phrase accents:** The phrase accents are the tones situated immediately after the last accent of the melody group until the boundary tones. Pierrehumbert (1980) maintains that the tones of the phrase accents line up independently of the strong syllables and of the phrase boundary.

**PHB explanation:** the speakers produce phrase accents in two different ways: (1) the phrase accent rise to a high boundary tone (H–) or (2) the phrase accent falls to a low tone (L–). When the speaker rises in the tonal contour he makes more effort favoring emphatic contrasts (human factor) in order to achieve maximum communication. When the speaker falls in the tonal contour, he exerts minimal effort (human factor) in order to maintain maximum communication.

- d. **Juncture tones:** The juncture tones are the boundary markers separating melodic groups. The potential placement of junctures will always coincide with the place or places in a text where a pause can be introduced. Pause involves the idea of stopping or interruption. Quilis (1993) describes two different kinds of pause placement: (1) the pause for breath, and (2) the linguistic pause,

which is placed according to the syntax, the semantics and the pragmatic levels of language.

**PHB explanation:** The presence of pauses during the utterance reflect that: (1) the muscular activity for speech needs “repose” (human factor) and (2) the speaker uses pauses for contrastive oppositions according to the syntax, the semantic and pragmatic levels of language (communication factor).

- e. **Rhythm:** the rhythm is the temporal or stress pattern of speech (Kent 1997). The analysis of rhythm is based on the perceptual correlates of duration and in the accentual pattern of the segments that involve the sequence duration.

**PHB explanation:** The acquisition of the segmental and suprasegmental features is similar to the acquisition of other skills needed to control fine motor movements (human factor). Therefore, in order to maintain the communication process (communication factor), both the encoder and the decoder produces and/or perceives prosodic oppositions.

The analysis of the suprasegmental features according to the principles of the theory of PHB listed above, confirm that in order to maintain a communication process, the synergetic interplay between the human factor and the communication factor supports the semiotic principles of the theory of PHB: the desire to achieve maximum communication with minimum effort.

The four basic orientations of the theory of PHB were applied to prosody as follows (Enbe 2009a: 53):

1. The communication factor: The speakers know the communicative functions of prosody and its respectively emotional or pragmatic implications.
2. The physiological orientation: Neurophysiological mechanisms of speech production and perception: the production and perception of prosody implies the activity of cerebral and physiological mechanisms.
3. The acoustic medium: the suprasegmental features are perceived as prominences, pauses and juncture tones in the communication process.
4. The human factor: the ability of human beings to use language has in particular the ability to use and regulate the suprasegmental features in order to exert minimal effort to achieve maximum communication contrasts in the sentence.

The results of Enbe (2003/2009a–c), for both typical and atypical speech of BAS are summarized in the following Tables 11 and 12. The data were extracted analyzing the sentence *la abuela le da un helado a la nena* (‘the grandmother gives an ice-cream to the little girl’), uttered by the six females mentioned above. Based on the theory PHB, the results show that the speakers of both typical and atypical speech use different strategies to maintain the mini–max struggle of minimal effort for maximum communication. However, even though the speakers of atypical speech use more effort to compensate for their deficit in speech, the poor quality of the speech also produces a loss of maximum communication.

**Table 11.** Summary of the results in the analysis of intonation for the sentence in BAS NS and PS according to the theory of PHB (Enbe 2003, 2009a–c)

Intonation	Typical or normal speech of BAS		Atypical or pathological speech of BAS	
	Melodic groups			
	Pitch accents			
	Phrase accents			
	The speakers prefer to divide the sentence into two melodic groups (the subject has four syllables and the predicate has ten syllables). <b>PHB:</b> the small number of melodic groups is an efficient way to obtain maximum communication with minimal effort.		The speakers prefer to produce random pauses and random number of syllables per melodic group. <b>PHB:</b> the use of shorter melodic groups requires less effort on the part of the speaker but results in a poor quality of communication.	
	The pitch accents fall on the tonic syllables of lexical words <b>PHB:</b> the stressing of tonic syllables reflects the exertion of minimal effort to attain maximum communication		The pitch accents fall on the tonic syllables of lexical words but in cases with cerebral injury, the speakers add accents in non-tonic syllables. <b>PHB:</b> placing the stress in more than one syllable in a single word implies more effort of the encoder without communication gain.	
	In the middle of the sentence, after a high pitch accent, the phrase accent may follow the same tone until the boundaries (H–H%) or may change to a low tone (L–L%). In utterance-final position, the speakers conserve the preplanning of the falling terminal contour of declarative sentences.		In the middle of the sentence, after a high pitch accent, the phrase accent maintains a high tone and then, falls to a lower boundary tone (H–L%). In utterance-final position, the speakers conserve the preplanning of the falling terminal contour of declarative sentences.	
	<b>PHB:</b> when the speaker produces a phrase accent in a high tone, he exerts more effort to achieve maximum communication contrasts. When the speakers prefer a low phrase accent, minimal effort is exerted to produce communication contrasts.		<b>PHB:</b> the variation found between the phrase accent and the boundary tone in the middle of the sentence, can be explained in the following three ways: <ol style="list-style-type: none"><li>1. the speakers produce an effort to arrive to a high pitch accent and then maintains the high tone in the phrase accent (maximum effort for maximum communication).</li><li>2. the speakers prefer a rising terminal contour but the non-coordinate muscular activity forces to him to fall to a low boundary tone (minimal effort for maximum communication).</li><li>3. the presence of pause involves the idea of minimal effort, so after a high phrase accent, the speaker falls to a lower boundary tone (minimal effort for maximum communication).</li></ol>	

(Continued)

Table 11. (Continued)

	Typical or normal speech of BAS	Atypical or pathological speech of BAS
Juncture tones	<p>In initial sentence position, all speakers use a low juncture tone. In the middle position of the sentence, the juncture tones may be in high or low tones. In utterance-final position, all speakers produce a low tone.</p> <p><b>PHB:</b> in initial and final positions of the sentence, the use of low tones implies a minimum effort on the part of the speakers. In the middle of the sentence, the use of a high boundary tone implies the use of more effort on the part of the speaker for maximum communication contrasts. The use of a low boundary tone implies minimal effort on the part of the speaker for maximum communication.</p>	<p>In initial position of the sentence, the majority of speakers use a low juncture tone. In the middle position of the sentence, the majority of speakers prefer a low juncture tone. In utterance-final position, all speakers produce a low tone.</p> <p><b>PHB:</b> the speakers of atypical speech conserve a preplanning of initial and final positions of the sentence and use low tones as in typical speech.</p> <p>In the middle of the sentence, the use of a low tone implies that the speakers prefer to put minimal effort for maximum communication.</p>

Table 12. Summary of the results in the analysis of rhythm in typical and atypical speech of BAS according to the theory of PHB (Enbe 2003, 2009a–c)

	Typical or normal speech of BAS	Atypical or pathological speech of BAS
Rhythm	<p>The speakers of typical speech show pitch accents with similar durations. The duration of the pauses, vary according to the speaker.</p> <p><b>PHB:</b> based on this theory, maintaining pitch accents with similar durations implies minimal effort on the part of the speaker for maximum communication.</p>	<p>The speakers of atypical speech have pitch accents and pauses with different durations. In some cases, the pitch accents are twice or three times longer than in typical speech.</p> <p><b>PHB:</b> in atypical speech, the use of different duration in the syllables and pauses produce longer utterances and poorer quality of communication.</p>

The results described in the above Tables 11 and 12 indicate that the speakers of both NS and PS should have a preplanning of the suprasegmental features of intonation and rhythm in the sentence. First, the speakers divide the sentence in melodic groups according to semantic and grammatical conventions or rules. Second, the speakers place the pitch accents in the tonic syllables of content words. Third, the phrase accents follow the tone of the boundary tones. Fourth, the speakers produce the classic falling terminal contour of declarative sentences. Finally, for rhythm, the speakers have variations in the duration of pitch accents and pauses. However, random variations in prosody were noted in PS as consequence of the alteration of the cerebral processes generated by the injury. Therefore, in order to favor the communication, the speaker produces more effort but generally is accomplished by a poor quality of speech.

Enbe (2009a: 65) also finds that BAS NS and PS speakers coordinate the suprasegmental features of intonation and rhythm in each syllable of the utterance. The speaker selects a synergetic combination of the suprasegmental features for each syllable on both the paradigmatic and the syntagmatic levels. On the paradigmatic level, the speaker chooses one feature of each of the prosodic components such as: (a) for intonation: a high versus a low tone; (b) for stress: a tonic versus a non-tonic syllable and; (c) for rhythm: a long versus a short duration of the syllables and pauses (time in seconds). On the syntagmatic level, the majority of speakers of BAS show that each following syllable has the opposite values of tone (e.g. L1+H\*, H\*+L1) in order to produce clearer prosodic contrasts. In typical and atypical speech, this prosodic preference according to the paradigmatic and syntagmatic levels supports the axiom of the theory of PHB: the desire to achieve maximum communication with minimal effort. However, in PS, some speakers have variations on both the paradigmatic and syntagmatic levels. Several variations are caused by the absence of the synergy or coordination among the suprasegmental features. The encoder compensates for the lack of synergy by expending more effort, producing more pauses, adding stress in non-tonic syllables and varying the duration of pauses and syllables resulting in a loss of both the quality of speech and maximum communication. Thus, even though the speakers of both BAS NS and PS have a synergetic coordination of the prosodic features on both the syntagmatic and paradigmatic levels, in atypical speech, cerebral injuries and/or peripheral disorders are a strong variable for prosodic disturbances producing prosodic variations. This is the reason why the functional communication process is affected negatively engendering a conflict between the communication and the human factor.

Later studies of BAS (Enbe 2006, 2009 a,b,c, Enbe et al. 2006; Enbe & Tobin 2007, 2008, 2009) analyze the intonation patterns of simple sentences (declaratives, wh-questions and exclamatory sentences) for both typical and atypical speech in a much larger population of males and females divided into different age groups. In all of these studies, the speakers of BAS exemplify the fundamental axiom of PHB that language represents a striving for maximum communication with minimal effort as follows:

- a. In the declarative sentences, the speakers prefer to contrast a high tonal contour in the subject and a falling tonal contour in the predicate.  
**PHB explanation:** the speakers produce minimal effort in order to achieve the most basic communication contrasts.
- b. In the wh-questions, which are more complex semantically, syntactically and pragmatically for the presence of the wh-word, the inverted word order and the presence of an interrogative terminal contour, the speakers of BAS produce

high pitch accents in the *wh*-word, in the verb and in the noun subject, and prefer a higher terminal contour.

**PHB explanation:** in this complex sentence, the speakers of BAS produce more effort in order to maintain the prosodic contrasts for maximum communication.

- c. In the exclamatory sentences, the speakers produce the classic unmarked high-falling patterns with wider prosodic contrasts than in declarative sentences.

**PHB explanation:** in this sentence, the speakers produce more effort in order to obtain more prosodic contrasts for maximum communication.

The data of the above BAS studies also show that in the declarative sentences, PS speakers produce more prosodic variations than the patterns of normal speech. In the marked but less difficult to produce exclamatory sentences, NS speakers followed the classic Spanish patterns while the PS speakers produced prosodic variations. However, in the most difficult, complex and highly marked *wh*-questions the speakers of both NS and PS speech expend a more defined and fixed effort to produce high pitch accents throughout the sentence. In short, we can assume that the easier the sentence, the greater the variation between the speakers of typical and atypical speech was found. In the more difficult sentence, less variation is found between these two groups thus reflecting and confirming the mini-max principle of the theory of PHB.

## 7. Conclusions

We found an inverse proportion between the difficulty of the sentence and the amount of variation between NS and PS speakers of BAS. We found that the easiest unmarked declarative sentences have the highest degree of prosodic variation between NS and PS speakers. In the most difficult marked *wh*-questions, the NS group shows more variation while PS speakers show less variation than in declarative sentences. Thus, the differences between the groups appears to be neutralized. In the marked – but less difficult to produce – exclamatory sentence, the NS speakers followed the classical norm while the PS speakers showed variation. Thus, in the unmarked declarative sentences, the differences between NS and PS speakers were the greatest, followed by the more difficult marked exclamatory sentences, while in the most difficult, complex and highly marked *wh*-questions requiring the most direct, defined and fixed effort, the difference between NS and PS speakers appears to be neutralized. In the unmarked structures the variation is greater because the easiest and most natural patterns produce a minimal general meaning whereas in the more marked structures more effort is necessary to produce the

more specific meanings that are associated with these structures and all speakers both typical and atypical must invest effort to produce the appropriate prosodic patterns necessary for communication.

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# Phonology as human behavior

‘Non-Vocalization’ – A phonological error process in the speech of severely and profoundly hearing impaired adults – from the point of view of the theory of phonology as human behavior

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‘Non-Vocalization’ (N-V), is a newly described phonological error process. In N-V the hearing impaired actually articulate the phoneme but without producing a voice. It ends up looking as if it is produced but sounding as if it is omitted. N-V was found by video recording the speech of profoundly (‘speech readers’) and severely (‘hearers’) hearing impaired adults and analyzing 2065 phonological error processes (substitutions, omissions and N-V) by 24 criteria resulting in 49,560 data points. Results, which were discussed according to the theory of ‘Phonology as Human Behavior’ (PHB), indicated that: (a) each group invested more effort in processes that enhanced communication, (b) the more a process enhanced communication the more frequent its use, (c) the easier the elicitation task, the more frequent the use of the more difficult processes that enhanced communication (d) the more difficult the elicitation task, the more frequent the use of easier to produce processes that did not enhance communication, (e) the more a phonological feature enhanced communication the more it was favored even if it required greater effort.

## 1. Introduction

In the course of our research ‘Phonology as human behavior: The speech of severely and profoundly hearing impaired adults’ (Halpern 2004)<sup>1</sup>, we discovered a phonological error process not previously discussed in the literature. Researchers traditionally have concentrated on substitutions, omissions and additions as the

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1. At the time our research was done, the term “hearing impaired” was politically correct. Today we might have used the terms “deaf” and “hard of hearing” instead of “profoundly impaired” and “severely impaired”.

major processes of phonological errors (Hudgins & Numbers 1942; Carrel 1968; Markides 1970; Oller & Kelly 1974; Smith 1975; Ingram 1989; Ling 1989; Flexer 1994; Tye-Murray 1998). In the process we discovered – which we called ‘Non-Vocalization’ (N-V) – the hearing impaired actually articulate a phoneme but without producing a voice. It ends up looking as if it is produced but sounding as if it is omitted.

Most of the previous research of hearing-impaired speech used audio-tapes meaning transcriptions done by ear (Smith 1975; Dodd 1976; Somers 1977; Metz et al. 1980; Gulian & Hinds 1981; Smith 1982; McGarr 1983; Sitler et al. 1983; Markides 1986; Monsen 1987; Abrahams 1989; Plant 1993; Whitehead et al. 1999). In our research we used video-recordings meaning transcriptions done both by ear and eye (audio-visual), the only way to observe this process.

There are many phenomena both in speech perception and production in children and adults with and without hearing impairment (and/or other disorders) that may, on the surface, appear to be similar or related to N-V (cf. ExtIPA Symbols for Disordered Speech (ICPLA 1997) (Duckworth et al. 1990) for silent articulation – sounds for which there are no available symbols). Some of them include the ‘McGurk effect’ (McGurk & MacDonald 1976), ‘silent articulation’ (Grunwell 1987: 58; Vihman 1996: 110, 215–16), and ‘mouthing’ (Boyes Braem & Sutton-Spence 2001). The McGurk effect shows that visual articulatory information is integrated into our perception of speech automatically and unconsciously causing a fused response or an audio-visual illusion where you are hearing one sound and seeing another. Silent articulation is an intentional action related to the production of articulating without voice (such as in /sh.../ for ‘silence!’, or unpronounced letters in a word (/night/)); and mouthing accompanies sign language or a reading task when the signer or reader articulates without producing a voice. N-V, on the other hand, is an unintentional, pathological production in which some consonants and vowels in a word are articulated without voice. Marilyn Vihman (p.c.) has assured us that silent articulation, as well as ‘jaw-wagging’ (i.e. the use of non-speech tasks in promoting the development of speech based on the assumption that non-speech skills transfer to speech skills) (Moore & Ruark 1996) in children, are totally different phenomena from what we call N-V. There is also a pathological voice feature found in French-speakers which has been defined as a result of a phonatory break and/or a whispery voice that is also called ‘silent articulation’ (Lorch & Whurr 2003). There is another superficially similar phenomenon called ‘silent lips articulation’ which is considered to be part of the egocentric language of 2–5 year old profoundly deaf children without oral or sign language training found in reflexive internal dialogues held with themselves (Kelman 2001). Neither of these phenomena is the same as the N-V we found

in profoundly deaf trained bilingual (Israeli Hebrew and sign language) adults performing diverse speech and communicative tasks (including non-reflexive external conversations) in our study.

## 2. The speech of the hearing impaired

Speech is (according to Fant 1963; Denes & Pinson 1963; Ladefoged 1982; Keller 1994; Tye-Murray 1998) a process in which the air stream coming from the lungs is modified by a sequence of motor motions performed by a human using the articulation organs (such as the vocal folds, tongue, lips), producing voice and a sequence of phonemes. These phonemes form the basis formation of syllables and words, which constitute the linguistic message.

The development of speech as a sound system begins pre-birth (in speech/sound perception) and continues through adulthood (in fluency and coarticulation), although there is a stage, around 8–10 mns of age, when mother tongue's sounds specialization occurs (Bates et al. 2002).

Phoneme acquisition and speech production are affected by motor development and by processes of perception, including:

- i. Auditory perception of the suprasegmental characteristics (such as intonation), segmental characteristics (such as active articulator/place of articulation) and paralinguistic characteristics (such as speaker gender).
- ii. Visual perception is the viseme which is the visual equivalent of a phoneme or a unit of sound in spoken language (/b/, /p/, /m// have one viseme) (Fisher 1968).
- iii. Tactile perception is the sensation produced by the contact between the various speech organs during speech production.
- iv. Kinesthetic perception is the spatial position sense of the speech organs during speech production.

Speech perception requires a listener/observer/receptor making decisions concerning the direct sensory information and the indirect linguistic information coming from the speaker (Bernstein et al.; 1996; Massaro 1997; Campbell et al. 1998; Boothroyd 2002, 2004).

Hearing loss impairs the reception and perception of sensory acoustic information, resulting in impairment of speech perception. This is due to the elevation of the detection threshold of speech sounds and the limitation of the accessible frequencies and their resolution and narrowing the intensity's dynamic range (Boothroyd 1986; Moore 1995, 1998). In general, it is easier to perceive changes in

intensity and rate than changes in frequency. It is easier, for the hearing impaired person, to perceive suprasegmental and paralinguistic features than segmental features and it is easier to perceive vowels than consonants. Even profoundly deaf speakers can distinguish these suprasegmental characteristics: sentence length, number of syllables, place of silence or stress in the sentence via the sound envelope since these cues rely on intensity and durations which are accessible (Boothroyd 1984, 1986; Ross 1990; Schow & Nerbonne 2002). In addition, the hearing loss affects the information related to content and context, meaning linguistic knowledge such as lexicon and syntax as well as general knowledge such as culture or the physical surroundings of the situational context. This acoustic, linguistic and general knowledge deprivation may affect the speech perception and production of the hearing impaired (Boothroyd 2002) and requires more reliance on the visual, tactile and kinesthetic perception.

There exists a direct link between speech perception and speech production as well as between the hearing loss and speech acquisition and production (Tye-Murray 1998; Ross 2001). The greater the hearing loss the more the speech perception is impaired. The more the auditory feedback is impaired, the more the speech production is affected. In fact, all speech features are affected (Hudgins & Numbers 1942; Markides 1970; Smith 1975; Ingram 1989; Dromi & Ringwald-Frimerman 1996; Tye-Murray 1998):

- i. **Voice:** The timbre may become hoarse, nasal or breathy and the pitch and loudness may be unstable and inappropriate.
- ii. **Suprasegmental:** The intonation may become monotonous and there may be disturbances of rate and stress.
- iii. **Segmental:** Both consonants and vowels may be substituted, omitted or added.

### 3. Phonology as human behavior (PHB)

The theory of PHB was developed by William Diver (1979) and his students of the Columbia School (CS) who define language as a symbolic tool whose structure is shaped both by its communicative function and by the characteristics of its users. In the CS framework, grammatical analyses account for the distribution of linguistic forms as an interaction between hypothesized linguistic meanings and contextual, pragmatic and functional factors such as inference, ease of processing, and iconicity. Phonological analyses explain the syntagmatic and paradigmatic distribution of phonological units within signals, also drawing on both communicative function and human physiological and psychological characteristics. Diver maintains that there is a constant struggle between our need for maximum

communication and our desire for minimum effort. The communication factor (requiring a large number of phonemes demanding a great deal of effort) will be in conflict with the human factor (striving for minimal effort) resulting in a trade-off between the two (cf. Tobin this volume).

The theory of PHB has been applied to the areas of developmental and clinical phonology and prosody in several languages of diverse genealogies and typologies for more than two decades. In particular, the natural segmental and phonotactic phonological processes developed by Stampe (1972/[1979]) and applied to the clinic by Grunwell (1987) and Ingram (1989) have been further elaborated upon according to the theory of PHB for developmental and clinical studies of children and adults in Hebrew, Japanese, and other languages (Tobin 1995, 1997a, b, 1999, 2002, 2005, Miyakoda 2002a, b, 2003a, b, and Tobin & Miyakoda 2006) and for bilingual Hebrew-English language acquisition (Gan et al. 1996). The theory has also been extended to clinical aspects of speech and prosodic phonology in Buenos Aires Spanish for normal and pathological speech for children and adults with stuttering, hearing impairment, developmental and neurological disorders and dysphonia (Enbe 2003; Enbe et al. 2006) and for intonation in the spoken language of Hebrew-speaking children with High Functioning Autism/Asperger (Green 2005).

#### 4. PHB and hearing – impaired speech

The phonological processes of hearing-impaired speech illustrate the basic tenet of the theory of PHB: the compromise derived from the constant struggle between the communicational factor (that is – our need for maximal communication) and the human factor (that is – our wish for minimal effort), (e.g. Halpern 1995; Tobin 1997a): Consonant omissions may be viewed as double ‘victory’ for the human factor: a. the greater the hearing-loss, the less audible the consonants are. The less audible consonants are the more they will be omitted. b. the omission process is favored since it does not require any effort (unlike substitution).

Hard of hearing speakers favor substitutions more than deaf speakers (Markides 1970). This is also due to the mini-max influences of the human factor and communication factor: the smaller the hearing loss (hard of hearing) the more audible the consonants and thus the more they are substituted (rather than omitted) and – substitutions are more communicative than omissions (and thus – more favored) since they preserve word and syllable structure (but they require more effort).

There is a tendency for devoicing. This tendency may also be seen as a double victory for the human factor: a. the hearing loss may cause inaudibility of the voice

resulting in devoicing. b. devoicing is favored since it requires less effort (one less set of articulators – the vocal folds).

## 5. The study

This research is the first to examine a group of adult deaf Hebrew speakers. It is also the first to demonstrate and analyze the phonological errors made by adult deaf speakers, according to the theory of PHB.

### 5.1 Study participants

Eight adult (17–45 years old) with sensory neural hearing impairment.

Four female, four male.

Four profoundly impaired (group 1, ‘speech readers’, over 90 dB hearing loss, corner audiogram), Four severely impaired (group 2, ‘hearers’, 70–90 dB hearing loss, mostly – medium and high tones).

All either congenitally or prelingually deaf.

All Israeli born, all exposed to Hebrew (L1).

All use Israeli Sign Language in addition to spoken language.

It is not by chance that we stipulate that our subjects were ‘exposed’ to Hebrew. Israel is the home of immigrants from all over the world some of whom live in large communities who speak Russian, Amharic, and other languages. Israel has a large native Arabic speaking population as well. Our subjects can all be best defined as bilingual speakers of Israeli Hebrew and Israeli Sign Language (ISL). In many countries such as Britain there is a big split between deaf children sent to oral schools versus children who are encouraged to sign. Thus, many deaf people in these countries only learn to sign in their teens or later. In Israel, there are ‘Oral’ schools versus schools that encourage ‘Total Communication’ (which actually is Oral Language (Hebrew) accompanied by Hebrew translated to signs that is Hebrew Signed Language which is not the same as ISL. ISL is not taught in schools but acquired either by deaf children born to deaf parents who use ISL as a native tongue, or acquired when deaf people interact within the community. A hearing impaired child who does not have hearing impaired parents is taught Hebrew accompanied by signs in school rather than ISL. Therefore, we have defined all the subjects in our study who were not born to deaf parents but interact within the community as speakers Hebrew as L1 and ISL as L2.

The question remains as to whether the participants’ background would affect their ability to perform the tasks, as well as their hearing? In future research we intend to compare and contrast hearing impaired speakers who use ISL as opposed

to those who do not. As previously mentioned, the N-V phenomenon was discovered as a 'by-product' in a research project that originally aimed to analyze the speech of severely and profoundly hearing impaired adult speakers. Regarding the background of the subjects: all the subjects in our study were not raised by hearing impaired parents and did not have ISL as L1. They learned ISL within the community. Their spoken Hebrew represents general Israeli Hebrew speech patterns. Israeli Hebrew is remarkably uniform with regard to regional dialects. All of our speakers were native born and have no traces of any ethnic variation based on the country of origin of their parents in their speech and they all may be considered to speak General Native Israeli or 'Sabra' Hebrew.

## 5.2 Methods

All study participants were video/audio-recorded (Sony Handycam Vision CCD TR24E) in four speech tasks (presented here from the easiest to perform, to the most difficult):

1. Articulation test (= word level) – which contained 80 pictures of words representing all the Hebrew phonemes in initial, mid, final, opening and closing positions.
2. Conversation (= spontaneous speech) – the participants responded to questions such as: 'what is your name'; 'what is your address'; 'what did you do last Saturday'; etc.
3. Reading aloud from a book – a passage containing 58 words.
4. Describing absurd cards (= challenged spontaneous speech) – the participants were given cards that displayed absurd or illogical objects and situations (e.g. "a pig with wings") and were asked to describe "what is wrong with this picture?" in 6 cards.

The speech tasks were presented randomly. All participants were video-recorded and tested by the same researcher (a speech pathologist), in a quiet room placed in familiar surroundings such as in the work place, school or at home. All recordings were phonetically transcribed by the researcher. A sample transcription was done by another observer (a speech pathologist) for reliability. The Kappa value of agreement was 94%.

All phonological error processes were analyzed disregarding familiar or descriptively non-prescriptive 'accepted errors' commonly found in normal fluent Israeli speech. There were 24 criteria for data analysis, such as: error type, phoneme type, position in word, position in syllable, voicing, change of voicing, airflow constriction, change of airflow constriction, active articulator, change of active articulator, etc.



5.3 Results

In general, the results indicated the following basic tendencies: (a) each group invested more effort in processes that enhanced communication, (b) the more a process enhanced communication the more frequent its use, (c) the easier the elicitation task, the more frequent the use of the more difficult processes that enhanced communication (d) the more difficult the elicitation task, the more frequent the use of easier to produce processes that did not enhance communication, (e) the more a phonological feature enhanced communication the more it was favored even if it required greater effort.

The results are based on 2065 sampled phonological error processes whose distribution were analyzed (using SPSS 11 for Windows) by the 24 criteria resulting in about 49 560 data points. All distributional differences were significant [Pearson Chi-Square – Asymp. Sig (2-sided) < 0.05].

As expected, group 1 – profound hearing loss – had more errors (1327) than group 2 – severe hearing loss – (738), due to the increasing effect of the severity of hearing loss on the speech production (the human factor overcoming the communication factor).

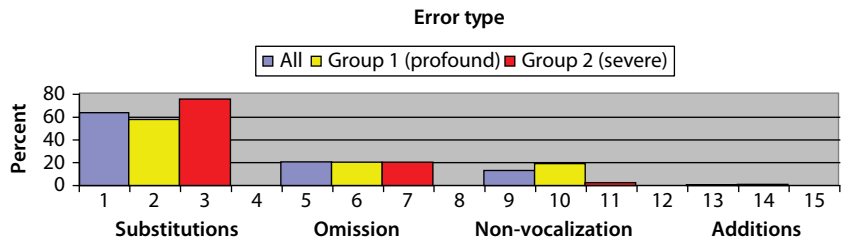


Figure 1. The distribution of error types

**Substitutions** were the major error process, 64% for all subjects, even though they are the most difficult error process since they require greater effort than omissions. This preference for errors of substitution provides evidence for the relative strength of the communication factor. Substitutions generally are, indeed, the most communicative error process since they preserve word and syllable structure.

On the other hand, it can be seen that group 2 (severe hearing loss, ‘hearers’), tended to substitute more than group 1 (profound hearing loss, ‘speech readers’): 75.9%:57.8%, respectively, due to the hearing loss severity effect. Hearers prefer to substitute because substitutions are more communicative for them. The greater the hearing loss, the more varied the types of errors, because substitutions are less communicative for those with a more profound hearing loss.

**Omissions**, the easiest error process to produce, but the most uncommunicative one, was equally as frequent in both groups (about 20%).

**Additions** were very rare (about 1%).

N-V was the second process (in addition to substitutions) that distinguishes between the groups. N-V was not previously described in the literature, and it can be noticed only on audio-video recordings (as opposed to pure-audio tapes). In this process the hearing impaired speaker, actually articulates but with no vocalization. The result is a production looking regular but sounding like omission. In subsequent research related to N-V (Nisani & Levin 2004), a video of words containing the N-V of front articulators in final position (pronounced by a deaf speaker) was presented to naïve judges. The results indicated that only the combination of visual and auditory channels made it possible to detect the N-V phenomenon. It should be mentioned again that N-V is a part of oral speech and it is distinguished from the phenomenon of mouthing which is a part of sign language (Boyes Braem & Sutton-Spence 2001) or a communicational method for post larynx operation. N-V is an unintentional pathological error process and thus it is also distinguished from what is usually referred to as silent articulation which is an intentional process.

N-V is a process requiring moderate effort, it requires less effort than substitution (no voice is produced) and more effort than omission (articulation is actually performed). The distribution of N-V was 13% for all subjects but there was a difference in the distribution of N-V between the two groups: group 1 (profound hearing loss, 'speech readers') demonstrated 19.3% of N-V (similar to the frequency of omissions), while group 2 (severe hearing loss, 'hearers') rarely used this error process (2.7%).

We assume that group 1 relies mainly on speech reading and less on auditory perception, therefore N-V is a very communicative process for those with profound hearing loss, because it looks like (but does not sound like), regular articulation, resulting in efficient speech decoding. Group 2, on the other hand, relies more on auditory perception and N-V, therefore, is not as communicative for them as it is for group 1. The result is a low distribution of N-V in group 2 (the 'hearers' with severe hearing loss).

It also should be mentioned that in some cases it was rather difficult, even almost impossible, to discriminate between N-V and omission. Therefore, we recommend that in the cases of final or closing positions of back (anterodorsum, posterodorsum and/or glottal) active articulators, spectrographic analysis should be performed to distinguish between omissions and N-V since those two processes look very much alike in/with those positions/articulators. Preliminary analyses using *[a]-OMIT* hearing speakers trained to use N-V versus omissions

have shown that vowel transitions preceding the non-vocalized consonants do appear on spectrograms (Nisanai & Levin 2004).

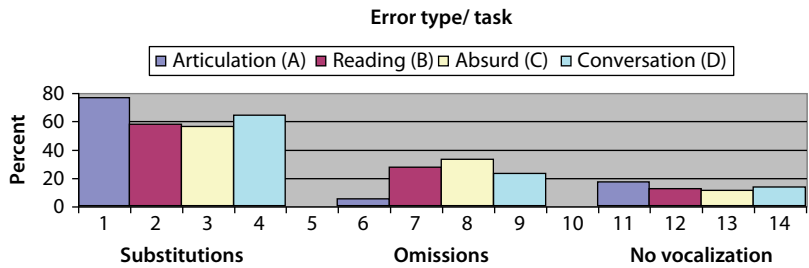


Figure 2. The distribution of error types, of all participants, by the elicitation tasks

In general, the more difficult the task (the human factor), the less effort was made for communication.

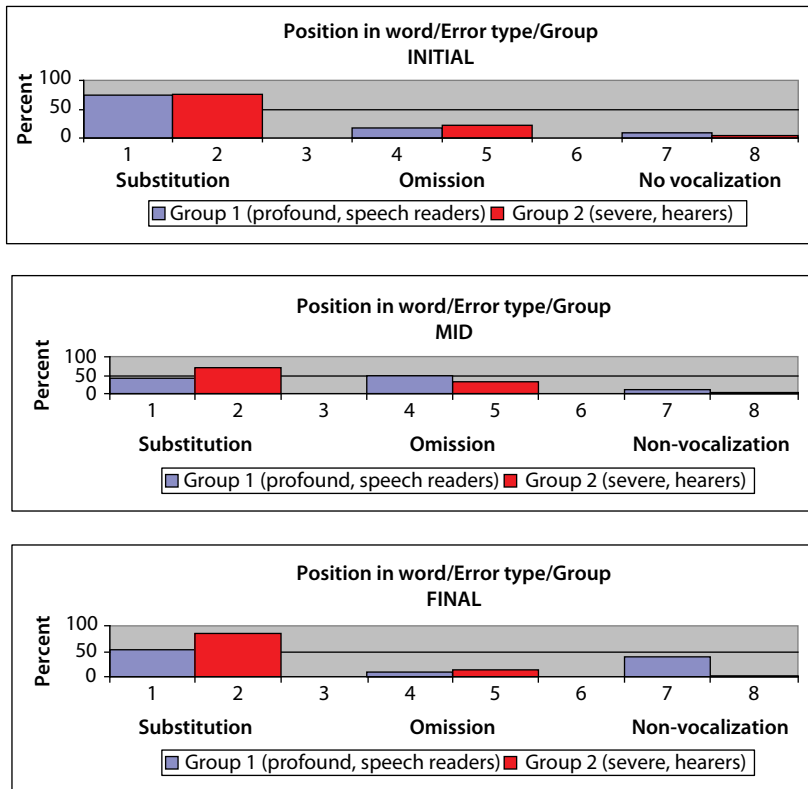
**Substitutions**, which are (as previously mentioned) the most communicative process, but the most difficult one to produce, were the most frequent process in the easier tasks and became less frequent in the more difficult tasks: in the articulation test: 75.9% of the error processes were substitutions, in the conversation: 63.5% were substitutions, in reading aloud: 57.4% and the absurd cards: 55.6% of the error processes were substitutions.

**Non-Vocalizations**, which require moderate effort (less than substitutions and more than omissions) demonstrated the same tendency, with the distribution of: 16.6% of the error processes in the articulation test, 13% in the conversation, 11.9% in reading aloud and 10.9% in the absurd cards.

**Omissions** demonstrated the opposite tendency. Due to the fact that they do not require any effort (but are the most uncommunicative process), they tended to become more frequent in the more difficult tasks: in absurd cards 32.8% of the error processes were omissions, in reading aloud 27.1%, in conversation 22.5% and in articulation test 4.9%.

Again, substitutions were the most frequent error in both groups and in most positions. Substitution is, as previously mentioned, the most communicative error process. In word-initial position, the position with the highest communicative load in the word, both groups demonstrated almost the same distribution for substitutions: 73.3% in group 1 and 74.9% in group 2. In mid word position, a position with a lower communicative load (save for when it is stressed), there was a gap between the groups: 40.3% in group 1 and 68.3% in group 2. In word final position, the position with the lowest communicative load (save for when it is stressed), the gap between the groups was even larger: 52.6% in group 1 and 84%

in group 2. These results indicate that the lower the communicative load is in the position in the word, the less tendency there was in group 1, (profound hearing loss, 'speech readers'), with respect to group 2 (severe hearing loss, 'hearers'), to make an effort and use the substitution process.

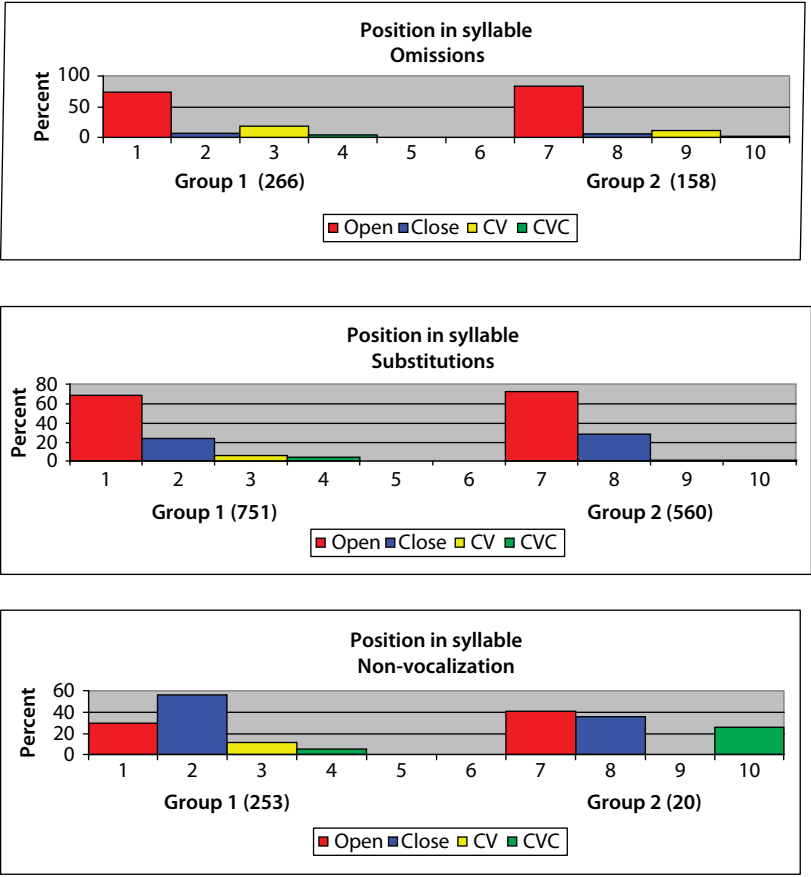


Figures 3a–c. The distributions of the errors in each group according to the different positions in the word

**Non-Vocalization** is, as a mirror image to substitution, a very communicative error process for 'speech readers' (group 1, profound hearing loss), because it looks like regular articulation. It is much less communicative or even uncommunicative for 'hearers' (group 2, severe hearing loss) because it sounds like omission. It has been observed that the lower the communicative load of the position in the word, the more frequent N-V was used by group 1 (speech readers), at the expense of the omissions and the substitutions, and the gap between group 1 and group 2 (hearers) became even greater: In initial position (the most communicative position) the distribution of N-V was 8.4% in group 1 and 3.8% in group 2. In mid position (a less communicative one) the distribution was 10.3% in group 1 and

1.1% in group 2. In final position (the least communicative one) the distribution was 38.7% in group 1 and – 2.4% in group 2.

**Omission** is the less communicative error process and it favored mid position which has a low communicative load (it is rarely stressed in Hebrew) and which was not very frequently found in this research (most of the productions where of 1–2 syllables only): In group 1 (profound HL, speech readers), 46.9% of the error processes, in mid position, were omissions (while in initial position only 17% of the error processes were omissions and in final position 14.2%). In group 2 (severe HL, ‘Hearers’), 30.6% of the error processes in mid position were omissions (and only 21.4% in initial and 13.7% in final position).



Figures 4a–c. The distribution of the error processes in the two groups, according to the position in the syllable

**Substitutions:** as expected, both groups favored the opening or syllable onset position which is the most frequent (all syllables have onset but not necessarily coda) and has the highest communicative load: In group 1 (profound), 67.5% of the consonantal substitutions were in the onset position and in group 2 (severe), 71.3% of them.

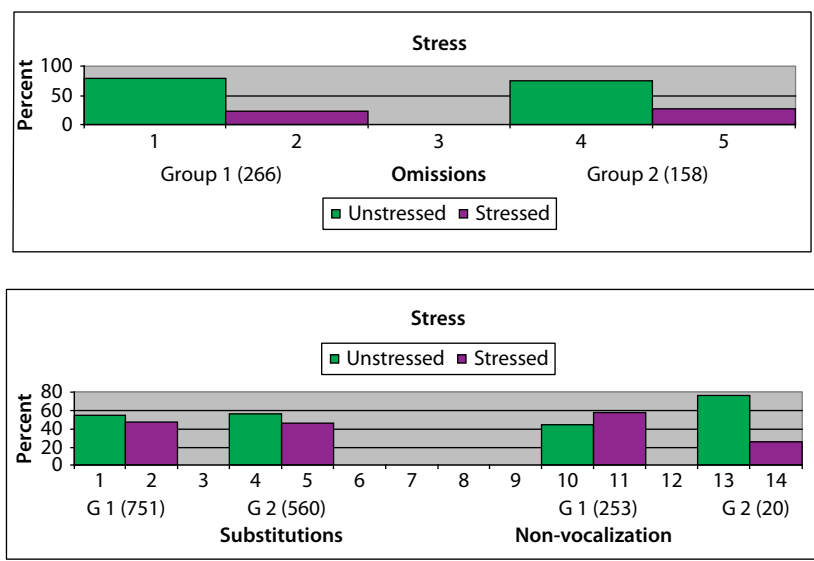
Vowels, which are fewer in number than consonants, louder, longer and generally easier to perceive and produce, were rarely substituted by group 2 (severe): 3% of all the substitutions were vowels in an open syllables (CV) and 1.4% of them were vowels in closed syllables (CVC). For group 1 (profound), vowels were substituted at a very low frequency – 10% of the substitutions were CV and 4.1% of them were CVC. These minor differences between the groups are due to the hearing loss severity/human factor.

**Omissions:** the distribution of consonants in the highly communicative syllable onset position is basically random, so as one may expect, both groups, favored the syllable onset position for consonant omission because of the high rate of difficult consonants in that position: 72.2% in group 1 (profound) and 81.6% in group 2 (severe). But it also would be expected that the coda or syllable closing position will demonstrate a higher frequency of consonant omission due to the favoring of the least communicative position for the less communicative process (omission). In fact, the coda position demonstrated a lower frequency for omissions: 6.8% in group 1 (profound) and 5.7% in group 2 (severe). We assume that the low communicative load of the coda position affected the N-V distribution:

**Non-Vocalization:** in this process, the coda position was favored, especially for group 1 (profound, speech readers): 54.9%. In group 2 (severe, 'hearers') 35% omissions in coda position. It should be mentioned, once again, that group 2 rarely used the N-V process (20 cases only in contrast to 253 cases in group 1). It appears that there are different tendencies in the realization of the struggle between the human and the communicative factors:

For group 1 (profound, speech readers), N-V is a communicative process (it looks like regular production) and it requires less effort (compared to substitution) to be produced. That is the reason why, in the less communicative, coda position, group 1 favor N-V.

For group 2 (severe, 'hearers'), N-V is an uncommunicative process (it sounds like omission) and it requires more effort (compared to omission) to be produced. That is the reason why group 2 rarely used the N-V process and in those few cases (20 only) that N-V was used, there was a random distribution of syllable positions.



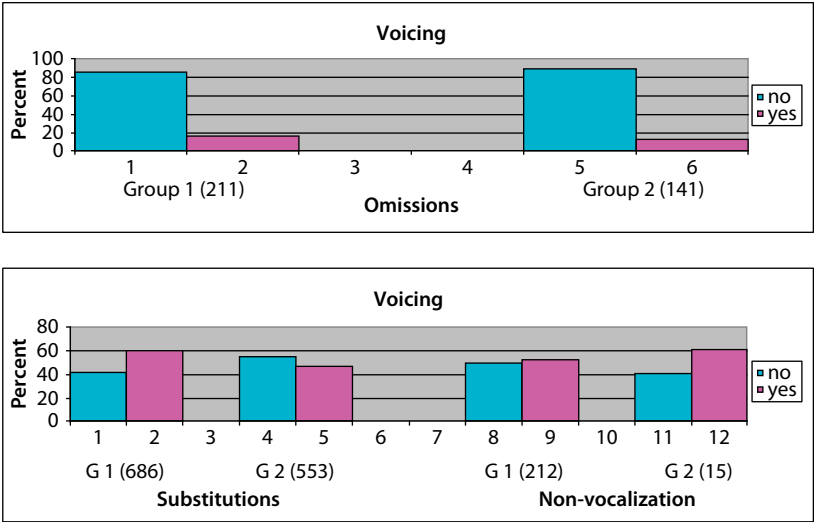
Figures 5a–b. The distribution of stressed and unstressed syllables in the error processes in the groups

**Omissions:** both groups omitted phonemes much more frequently in unstressed syllables: 77.4% in group 1 (profound, ‘speech readers’) and 73.4% in group 2 (severe, ‘hearer’s’). Omissions are the most uncommunicative error process and were, therefore, favored in the less communicative (unstressed) environments.

**Substitutions:** both groups substituted phonemes in unstressed syllables as well, but to a lesser extent than omissions: 53.7% in group 1 (profound, ‘speech readers’) and 55% in group 2 (severe, ‘hearer’s’). We assume that this is due to the compromise between the human and communicative factors where the substitution process is the most communicative but also the process requiring the most effort and therefore it is more favored (than omission) in a communicative environment (stressed phonemes).

**Non-Vocalization:** group 1 (profound, ‘speech readers’) favored the stressed phonemes carrying more communicative information (56.5%). N-V is a very communicative error process for the speech readers because it looks like regular articulation. Therefore, N-V was favored for phonemes in the more communicative (stressed) environments, in group 1. NV is most similar to omissions from the point of view sound – but from the point of sight it is diametrically opposed to omissions and is perceived as typical speech thus making it preferred by the speech readers.

Group 2 (severe, hearers), on the other hand, favored the unstressed phonemes in the N-V process (75%). N-V is a less communicative, or even an uncommunicative error process for the hearers, since it sounds like omission. Therefore, for group 2 (severe, hearers) N-V was favored for phonemes in the less communicative (unstressed) environment, exactly like in omissions.



Figures 6a–b. The distributions of voiced and un-voiced phonemes in the error processes in the groups

**Omissions:** both groups, favored omissions for the voiceless phonemes: in group 1 (profound), 84.4% were voiceless phonemes and in group 2 (severe), 87.9% were voiceless phonemes. Voiceless consonants are more frequent than voiced consonants in spoken language, 63:37 respectively for English (Mines et al. 1978) and we postulate that the relative frequency of voiced versus voiceless consonants in spoken language for Hebrew is similar to that of English based on our impressions, cursory examinations of spoken conversations and previous clinical phonetic research discussed below. In addition, omissions, as previously mentioned, are the most uncommunicative error process and the communicative factor is lower for voiceless phonemes (a double communicative factor). Voiceless phonemes are also easier to produce than their voiced counterparts (one less set of articulators = the human factor). Therefore it may be expected that the voiceless phonemes will be more frequently omitted than their distribution in the spoken language.

The assumption that the frequency of voiced versus voiceless consonants in spoken language for Hebrew will be similar to that of English is based on



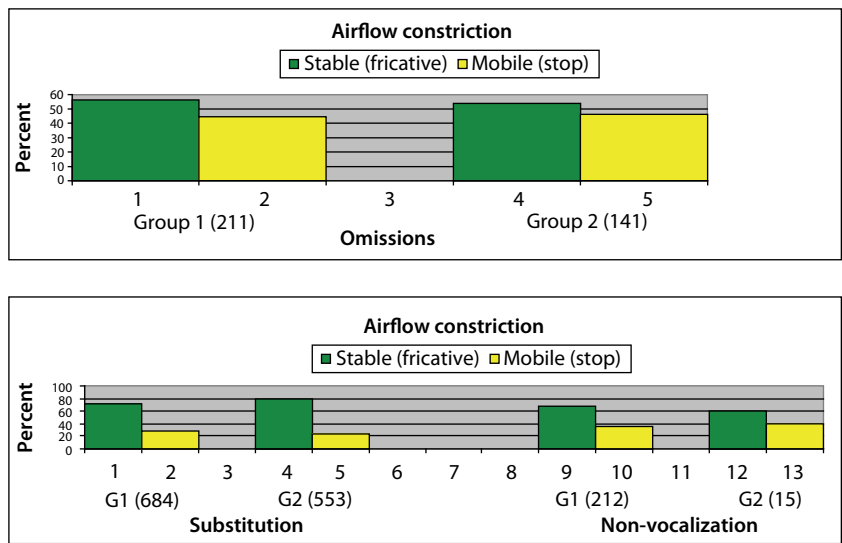
previous studies which have compared and contrasted the phonological systems of both languages for clinical purposes (e.g. Kishon-Rabin et al. 1999). English has a much more complex system of both consonants and vowels than Israeli Hebrew but the voiced/voiceless phonemic opposition is primarily significant for obstruents where both languages are quite similar. They both share the labial, apical anterodorsal and posterodorsal stop/fricative voiced/voiceless pairs: p/b f/v, t/d, s/z,  $\Sigma/Z$ /, k/g. Hebrew also has a posterodorsal fricative pair  $x/\Phi$  not found in English which can be matched with the apical-dental pair  $\theta/\delta$  in English that does not appear in Hebrew; and they both share similar voiced and voiceless affricates. The proportion between voiced sonorants versus voiced/voiceless paired obstruents or voiceless consonants is also quite similar in both languages. Therefore, despite the differences in genealogy and typology, and together with the fairly balanced differences and similarities of their phonemic inventories, we have found that the basic processes of their phonotactic distribution are quite similar – and they both follow the phonotactic principles that have been established by PHB for many and diverse languages (see Tobin this volume). Therefore, we allowed ourselves – in this specific question of the voiced-voiceless ratio between Hebrew and English – to assume a similar proportion of voiced -voiceless sounds based on the previous research we have already cited for a wide range of languages of diverse genealogies and typologies. We are not claiming that the phonemic systems and phonotactics of English and Hebrew are identical, but the basic voiced-voiceless opposition is proportionately similar both in the phonemic repertoire of both languages as well as in the most common phonotactic principles tested in both of these languages based on the tenets of the theory of PHB.

**Substitutions:** in this process, there were different tendencies: group 1 (profound hearing loss, ‘speech readers’) favored the voiced phonemes (59.2%) in contrast to their distribution in spoken language – presumed to be about 63:37 voiceless:voiced respectively. As previously mentioned, voiced (and nasal) phonemes contain two (or three) sets of muscles (vocal folds + oral = voiced, or vocal folds + oral + uvula = nasal). The human factor promotes the reduction of the number of sets of muscles and results in the substitution of voiced phonemes (two sets of muscles) with their voiceless counterpart (requiring just one set of muscles). In addition, one must remember that for group 1 (profound, speech readers), the higher communicative value for voiced phonemes making them worth the effort to produce is lost. Group 1 (profound, speech readers) frequently fail to hear voice and therefore fail to produce it. Due to these tendencies related to the synergetic interaction between the human and communication factors, voiced to voiceless substitutions are more frequent in group 1 as is the preference for n-v in stressed syllables discussed above.

Group 2 (severe hearing loss, hearers) on the other hand, favored the voiceless, less communicative, phonemes to be substituted (54.1%). This distribution is less than their distribution in spoken language – presumed to be about 63:37 voiceless: voiced respectively. This is due to the fact that group 2 can, most of the time, hear and derive communicative benefit of the voice and thus produce it, but due to the human factor (one less set of articulators) the voiced phonemes are occasionally substituted by their voiceless counterparts.

**Non-Vocalization:** both groups favored the voiced phonemes possibly due to the human factor where voiced phonemes require the use of two sets of articulators and the use of N-V neutralizes this relative difficulty: in group 2 (severe, hearers) 60% and in group 1 (profound, speech readers) 51.4%. As previously mentioned, group 2 rarely used the N-V process (15 cases of consonantal N-V only) since it is a non – communicative process for the ‘hearers’ (it sounds like omission). Therefore the voiced/voiceless distribution in group 2 seems random. Group 1, on the other hand, used the N-V process frequently (212 cases of consonantal N-V) since the ‘speech readers’ perceive N-V almost like regular articulation (it looks the same). Therefore, since most of the subjects of group 1 have difficulties hearing regular speech (human factor), the communicative value for vocalized and non-vocalized phonemes is almost the same (communicational factor) and, moreover, the previously mentioned tendency for avoiding the use of the more difficult voiced phonemes (human factor) results in the distribution of 49:51 for voiceless and voiced phonemes for N-V, more than the distribution of the voiced phonemes (37) in spoken language.

Diver (1979) proposed two alternative phonemic distinctive features mobile and stable to describe the manner of articulation that produces different degrees of airflow constriction for consonants. Mobile indicates that the articulators are in motion while producing the consonants such as stops, trilled /r/, etc. Stable indicates the opposite: the articulators remain in a relatively stationary position during the excitation of the resonant cavity while producing sounds such as fricatives, lateral approximant /l/, etc. The point of mobile versus stable is that a stop is composed of three distinct actions which are all interrelated and together form the sound: the closure, the stopping/accumulation of air and the release – just like a trilled /r/ has a back and forth movement, thus these movements are necessary to produce these sounds – the acoustic information that characterizes these sounds is based on these movements – thus they are mobile sounds. A stable sound such as a fricative – even though two articulators approach each other – they remain in place without movement to produce the continuous acoustic information that identifies them – just like in the lateral approximant /l/ the tongue position is maintained so that the air exits through the sides giving us continuous formants – therefore these



Figures 7a–b. The distribution of airflow constriction in both groups according to error type

sounds are stable – because they are identified by the acoustic information that is produced by their lack of movement by their staying in place. We are not claiming that a sound is exclusively mobile or stable in its production but the mobile/stable distinction is what produces the different acoustic pattern created by the sound as a whole unit.

It can be seen that these distinctive features of mobile and stable postulated by the theory of PH are relevant to they type of error process as well:

**Omissions:** as expected, in both groups the stable phonemes were favored, ~55 : 45 stable:mobile respectively. Since stable phonemes are more difficult to produce it would be expected that they will be omitted more than the mobile phonemes. On the other hand, this distribution of 55 (for stable phonemes) is lower than it would be expected due to (a) the known 60 : 40 stable:mobile distribution in spoken language [as found for English (Mines et al. 1978) and which we assume will be similar for Hebrew]. (b) the human factor regarding the greater effort required to produce the stable phonemes (in contrast with the easier mobile phonemes).

We assume that the 55 : 45 skewing is due to the favoring of the opening position by the omission process, ~80 : 6 opening:closing respectively, in group 2 (severe) and 72 : 7 in group 1 (profound)(see Figure 4a–b). Previous work in PHB (Tobin 1997a,b) has shown that in word formation and in spoken language, the initial or opening position favors mobile phonemes while final or closing position favors stable phonemes in general and in Hebrew in particular due to historical

avored allophonic distributions of stops and fricatives in the widespread process of spirantisation found in biblical Hebrew (Tobin 1997a: ch. 5). The result, therefore, is the increase of the mobile distribution and the decrease of the stables, in the omission process.

**Non-Vocalization:** here, too, as expected, in both groups, the stables were favored. Group 1 (profound, speech readers) demonstrates a 67.5:32.5 stable:mobile skewing and group 2 (severe, speech hearers) demonstrates a 60:40 skewing.

Group 2 (severe, hearers), as previously mentioned, rarely used the N-V process (15 consonantal cases), since it is not a highly communicative process for them. In those few cases the distribution of 60:40 stable:mobile respectively equals what we have postulated as the 60:40 stable:mobile skewing in spoken language.

Group 1, (profound, speech readers) on the other hand, favored the N-V process (212 consonantal cases), because it is a highly communicative process for them and they further demonstrated a favored distribution of the stable phonemes (67.5:32.5) which is higher than what we have postulated for spoken language (60:40). We assume that this higher distribution is due to the combination of the 60:40 skewing in spoken language with the previous mentioned 55:30 closing:opening skewing for group 1 for N-V. The closing position has been known to favor stables phonemes (both in language acquisition and in word formation) (Tobin 1997a,b) which may account for, or be related to the rise in the distribution of stable phonemes in N-V for group 1. In addition, one must recall the human factor effect resulting in favoring avoidance (N-V) of the more difficult to produce stable phonemes.

**Substitutions:** here too, as expected, in both groups the stable phonemes were favored. Group 1 (profound) demonstrates a 72:28 stable:mobile skewing and group 2 (severe) demonstrates a 77:23 skewing.

These distributions are expected due to the postulated 60:40 stable:mobile skewing in spoken language combined with the small rise of the closing position favored by both groups for the substitution process, about 70:25 opening: closing respectively (see Figure 4b). The closing position, as previously mentioned, favors stable phonemes. In addition, there is the double human factor effect of favoring the substitution of stable phonemes because (a) they are more difficult to produce than mobile phonemes (b) many of the stables have low intensity and are, therefore difficult to be perceived. In addition there is the combined communicative and human factors effect (especially in group 2 – the ‘hearers’) of the trial to tune the production of the stables /s/ /S/ /ts/ /z/ by ear. It results in the special production of these phonemes by hearing impaired speakers which we called ‘mixed’ [where they substitute the apex by the anterodorsum in a mixture of stability (fricative)

and mobility (stop)]. The result of these processes is the high distribution of stables in the substitution error process.

## 6. Summary and conclusions

It has been demonstrated that the distributions of the phonological error processes, in the speech of severe and profound hearing impaired adults, are due to the struggle between the communication load [of the error processes, of the communicative environment and of the phonological features (= the communicative factor)] as to each group ('speech readers' and 'hearers' = the human factor), and the effort required for the perception and production [of the error processes and of the phonological features (= the communication factor and the human factor)] and the degree of difficulty of the speech task [articulation test, conversation, reading aloud and describing absurd cards (= the communicative factor and the human factor)].

1. The greater the hearing loss was the greater the communicative defect (such as: greater numbers of error processes, higher distribution of the uncommunicative phonological error processes and of the more communicationally loaded phonemes).
2. The more communicative the phonological error process, the greater the effort expended on it.
  - a. Substitution is an error process which requires the greatest effort and it is the most communicative phonological error process, especially for the 'hearers'. Therefore, substitutions were the most frequently used error process, in both groups, but more in the 'hearers'.
  - b. Non-Vocalization (sounds like omission but looks like regular production) which is described for the first time in this research, is an error process which requires a mild effort and it is a communicative phonological error process for the 'speech readers'. Therefore, N-Vs were much more frequently used by the 'speech readers' than by the 'hearers'.
  - c. Omission is an effortless error process but it is an uncommunicative one. Therefore, omissions were a less frequently used error process, by both groups.
3. A communicative phonological error process, which requires greater effort, had higher distribution in an easier speech task and the distribution fell as the task's difficulty rose, followed by a rise of the distribution of phonological error processes requiring less effort. (The articulation test is the easiest

task, followed by conversation and reading aloud and describing absurd cards is the most difficult task). Therefore, the N-V process (requiring some effort and having a high communicative load for the 'speech readers') was more frequently used by the speech readers at the articulation test and its frequency was lowered as the task difficulty was rising.

4. A communicative phonological error process favored a communicative environment. An uncommunicative phonological error process favored an uncommunicative environment. [Communicative environments were, for example: opening position (or stressed coda), initial position, stressed syllable and voicing). Therefore, the N-V process favored the word-final and the coda positions, the stressed syllable in 'speech readers' (group 1, profound HL) and the unstressed syllable in 'hearers' (group, 2 severe HL) and voiced phonemes.
5. Phonological features, requiring more effort, were less preserved. Therefore, the N-V process favored the voiced and stable phonemes (especially, of course, in group 1, profound HL, 'speech readers').

The 'new' phonological error process, which we called N-V, was found to be highly communicative for profoundly hearing impaired 'speech readers'.

The N-V process, which looks like regular articulation, but sounds like omission, enables the hearing impaired speaker to preserve the word/syllable structure.

The N-V process, like the other processes (substitution and omission) reflects the constant struggle between the human factor (minimum effort) and the communicative factor (maximum communication) inherent in language.

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# Phonology as human behavior

## Comparing and contrasting phonological processes in adult dysarthria and first language acquisition

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Traumatic Brain Injury (TBI) may lead to dysarthria which is caused by weakness of the articulatory musculature. This paper investigates Polish TBI dysarthric speakers ( $n = 6$ ) and matched controls with normal speech ( $n = 10$ ). The data were transcribed in narrow phonetic transcription and analyzed acoustically. Three TBI subjects were diagnosed with moderate dysarthria and three with mild dysarthria. The results show that the patients regress to some degree in their articulation to the level of first language (L1) acquisition in general and they use many processes which appear in child's speech in particular. However, some of these processes have been defined as idiosyncratic in L1 acquisition while others do not appear at all.

### 1. Introduction

Post-traumatic or TBI dysarthria is a complex speech disorder which occurs in 30–50% of individuals who suffered Traumatic Brain Injury (TBI) followed by a subsequent coma (Duffy 1995; Pąchalska et al. 2004). TBI dysarthria is characterized by impaired production of vowels and consonants, weak phonation, flattened prosody, distorted resonance (mainly due to poor control over the soft palate) and problems with co-ordinating articulation with phonation (Weiss et al. 1987; Bowen 1988; Cahill et al. 1996; Theodoros & Murdoch 1996; McHenry 2000, 2003; Połczyńska-Fischer & Pufal 2006; Połczyńska 2009; Rosen 2006).

Populations with speech disorders apply natural phonological processes which are used by children in first language [L1] acquisition (Stampe 1972; Grunwell 1987; Ingram 1990; Dressler & Dziubalska-Kołaczyk 1995; Tobin 1997, 2002; 2009). Post-traumatic dysarthria (Połczyńska-Fischer 2006; Połczyńska-Fischer & Pufal 2006; Połczyńska 2009) is one such speech disorder where patients revert to the processes of L1 acquisition. However, there are substantial differences between TBI adult individuals with dysarthria and children acquiring their L1. First, TBI

adults have a fully developed phonology which in the vast majority of cases is not distorted, whereas children acquiring L1 may not have a fully established phonological system. Secondly, individuals with TBI suffer from a debility in their articulators: e.g. the tongue, lower jaw, soft palate and the vocal folds. For this reason they resort to processes which allow them to be understood despite this articulatory weakness: e.g. spirantization of stops. This process is very common in TBI speech because it results from the inability of post-coma patients to produce a full stricture of the articulators. As a consequence, patients produce a homorganic fricative which entails a less than complete closure. Processes such as spirantization occurring in the speech of TBI patients have been called Articulatory Patches [APs] (Połczyńska-Fischer 2006; Połczyńska 2009). APs are both more regular and easier to predict than processes in L1 acquisition because they appear as result of a debility in the articulatory musculature. TBI patients “patch up” phonemes which are problematic with processes that allow them to perform more facile movements of the articulators (Połczyńska-Fischer 2006; Połczyńska 2009). This supports Tobin (1997) who states that organic processes such as dysarthric processes are infrequent in L1 acquisition, more consistent and easier to predict because they can be directly accounted for by the organic etiology related to a particular syndrome. In the case of TBI patients, the organic motivation is the inability to obtain full closure of the articulators resulting in a phonetic undershoot of the jaw, tongue or lips, as well as a weakness of the vocal folds and the velopharynx.

Natural phonological processes (Stampe 1972) were first observed in L1 acquisition and defined in the framework of Natural Phonology (NP) (Dressler 1985, 1987; Dziubalska-Kołaczyk & Dressler 1995; Dziubalska-Kołaczyk 2002). These processes have been applied to L1 acquisition and clinical speech and further explained by Tobin (1997, 2002; 2009) within the theory of Phonology as Human Behavior (PHB) (Diver 1979).

The phonological processes appearing in L1 acquisition are classified into three major categories:

1. **Substitutions:** stopping of fricatives, deaffrication, affrication of plosives, spirantization of glides and stops, nasalization of consonants and vowels, denasalization, vowel neutralization, vocalization, gliding, gliding of fricatives and affricates, fronting and backing of consonants, vowel fronting, backing, raising and lowering.
2. **Assimilations:** devoicing, prevocalic voicing, consonant harmony.
3. **Changes in a syllable structure:** consonant deletion, consonant cluster reduction, unstressed vowel deletion, stressed vowel deletion, vowel epenthesis, unstressed syllable deletion, stressed syllable deletion, syllable addition, metathesis, reduplication.

The purpose of this study is to present APs which occur in TBI dysarthria with emphasis on those which are idiosyncratic or extremely infrequent in L1 acquisition.

## 2. Methods

We investigated six native-speaking Polish post-coma patients with TBI (five males and one female) and a matched Control Group (CG) ( $n = 10$ ; five males and five females) with no history of brain pathology. Table 1 summarizes the medical background of the TBI participants. The average age of the TBI patients was 26.(SD = 5.58) years and the mean age of the CG was 29.(SD = 6.75) years. Coma duration in the TBI group ranged between three weeks to two months and the post-coma period ranged between one to five years.

The severity of dysarthria in the TBI group was assessed according to standard tests used in Polish speech and hearing clinics. Three subjects were diagnosed with moderate dysarthria (MOD) and three with mild dysarthria (MIL).

**Table 1.** Biomedical data of six TBI patients

Patient	P1	P2	P3	P4	P5	P6
Age	27	22	25	23	22	38
Duration of coma	1.5 month	2 months	1.5 month	3 weeks	3 weeks	1 month 3 weeks
Time after awakening	1 year	5 years	2 years 7 months	1 year 4 months	1 year 6 months	1 year 5 months
Type of cerebral trauma (CT scan)	Intracerebral haematoma of the right temporo-parietal lobe with a perforation of the ventricular system	Extensive brain oedema	A trace of blood in the right parietal horn. A small hypodense region in the semiovale centre (right side)	Subdural haematoma of the right fronto-temporal lobe.	Subdural haematoma of the biletaral frontal lobe	Haemorrhagic foci in the frontal regions and in the third ventricle
Post-traumatic aphasia	Moderate	Moderate	Mild	Moderate	Moderate	Moderate
Post-traumatic dysarthria	Mild	Mild	Mild	Moderate	Moderate	Moderate

The speech sample recordings were carried out in a quiet hospital room. A Philips SBC MOD110 microphone was placed 30 cm from the speaker. It was connected to a Fujitsu-Siemens AMILO Pro V2030D computer. All the participants were asked to perform the Polish Dysarthria Test for TBI Patients (PDTTP) (Połczyńska-Fischer & Pufal 2006) that contains the following tasks:

- a. Articulation of Polish vowels a/, /ɛ/, /i/, /o/, /u/, /ɨ/ in isolation.
- b. Articulation of consonants in a single syllable and in a tri-syllabic string.
- c. Production of single words (phonological fluency task, naming pictures).
- d. Repetition of four short stories (e.g. *Szczepan Szczygieł z grzmiących Bystrzyc przed chrzcinami chciał się przyszczyć* /ʃtʃɛpan ʃtʃɨgɛw z gʒmjãtsɨx bitits pʃɛt xʃtɕinami xtɕaw ʃɛ pʃɨtʃɨts/ “Szczepan Szczygieł from thundering Bystrzyce wanted to get his haircut done before the day of baptism”).
- e. Spontaneous speech – retelling two short stories.

We analyzed the recorded data applying the following criteria:

1. Number of occurrences of APs in all the tasks in all the patients.
2. Number of occurrences of APs in all the tasks in each patient individually.
3. Frequency of APs in all the tasks, measured in percentages.
4. Frequency of types of APs in each patient individually, measured in percentages.

The analysis of APs was determined both perceptually and acoustically with Praat (Boersma & Weenink 2005). TBI dysarthria has been analyzed acoustically in several studies (e.g. Ziegler & von Cramon 1983; Weismer et al. 2001; Wang et al. 2005), however prior to our current research neither natural phonological processes in general nor APs in particular have been analyzed using acoustic methods.

### 3. Results

The TBI patients used twelve APs which are either extremely infrequent or do not appear in the L1 acquisition literature. APs which are relatively uncommon in L1 are: spirantization of stops, backing, gliding of fricatives, and gliding of affricates. APs which have not been reported for L1 acquisition are: incomplete consonant closure, vowel centralization, consonant approximation, glottalization of /x/, vowel spirantization and consonant epenthesis. Changes in the articulatory force (weak and strong articulations) have also been observed for TBI patients, but this AP has not been attested to as a process in the L1 acquisition literature. However, it should be mentioned that strong articulations or hyperarticulations occasionally appear in L1 acquisition.

Among all the 33 APs used by the TBI group, 27.2% (including strong and weak articulation) were infrequent in L1 acquisition. The most commonly used

process in TBI dysarthria was incomplete consonant closure, which has not been reported in the L1 literature. Among the first four most frequently applied APs, three were uncommon in L1 acquisition. Within the ten most frequently used APs, five were idiosyncratic in child's speech.

The most commonly applied processes for TBI were incomplete consonant closure – 17.2% of all the APs which appeared and spirantization of stops – 14.3% (see Figure 1). The remaining processes appeared in the following order of frequency: consonant cluster reduction – 10.7%, vowel centralization – 8.7%, consonant deletion – 8.5%, devoicing – 5.6%, unstressed vowel deletion – 3.7%, deaffrication to a fricative – 3.2%, vowel nasalization – 3%, consonant approximation – 2.7%, stopping of fricatives – 2.3%, stressed vowel deletion – 2%, reduplication and glottalization of /x/ – 1.7%, unstressed syllable deletion – 1.5%, stressed syllable deletion – 1.3%, prevocalic voicing, strong articulation and vowel neutralization – 1.1%, vowel fronting, vowel rising, – 1%, vocalization – 0.85%, vowel spirantization, omission of a stressed syllable – 0.68%, gliding of fricatives,

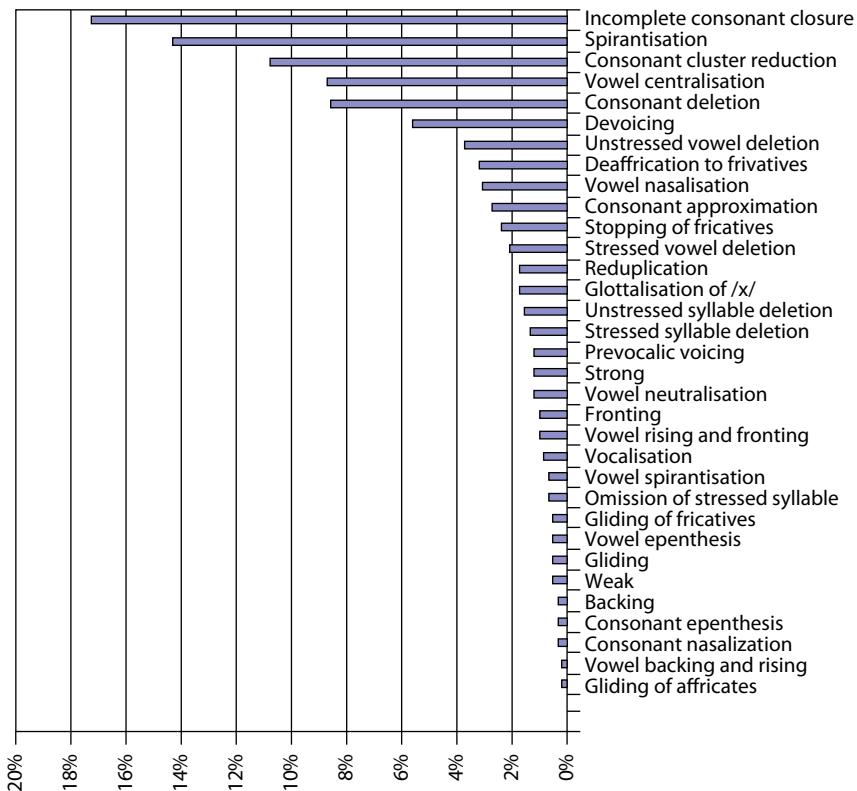


Figure 1. Ranking of the types of processes in all the tasks given in percentages



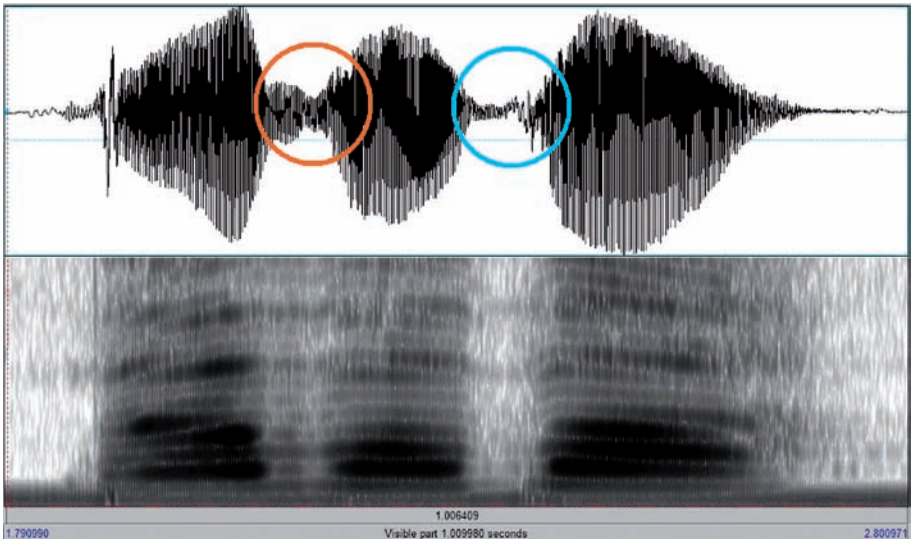
vowel epenthesis, gilding and weak articulation – 0.51%, backing, consonant epenthesis and consonant nasalization – 0.34, vowel backing, rising and gliding of affricates 0.17%. The ranking of the types of processes in all the tasks given in percentages is presented in Table 1. The above percentages were based on all the occurrences of APs in all of the patients in all of the tasks and appear in Table 2 according to their word position.

Table 2. Summary of all the occurrences of APs in all the TBI patients in all the tasks

Process	Type	Initial	Medial	Final	Total
Substitutions	Spirantization	31	49	3	83
	Stopping of fricatives	6	9	0	15
	Deaffricatization to fricatives	5	13	1	19
	Gliding of fricatives	1	2	0	3
	Gliding of affricates	0	1	0	1
	Gliding	2	1	0	3
	Glottalization of /x/	24	6	0	30
	Consonant nasalization	2	0	0	2
	Backing of consonants	0	2	0	2
	Fronting of consonants	4	2	0	6
	Vocalization	2	1	2	5
	Vowel nasalization	1	15	18	34
	Vowel neutralization	0	1	0	1
	Vowel backing	0	1	0	1
	Vowel fronting	1	3	2	6
	Vowel rising	1	4	2	7
Assimilations	Vowel spirantization	0	4	0	4
	Devoicing	25	8	0	33
	Prevocalic voicing	1	5	1	7
Syllable structure changes	Stressed syllable deletion	1	10	1	12
	Unstressed syllable deletion		8	5	13
	Consonant deletion	5	10	25	40
	Consonant cluster reduction	24	37	3	64
	Stressed vowel deletion		7	4	11
	Unstressed vowel deletion	4	11	7	22
	Consonant epenthesis	0	2	0	2
	Vowel epenthesis	0	3	0	3
Underarticulations	Reduplication	4	3	3	11
	ICC	33	55	7	95
	AC	4	9	4	17
	Vowel centralization	0	35	16	51
Articulatory force changes	Strong articulation	1	3	0	4
	Weak articulation	0	1	2	3

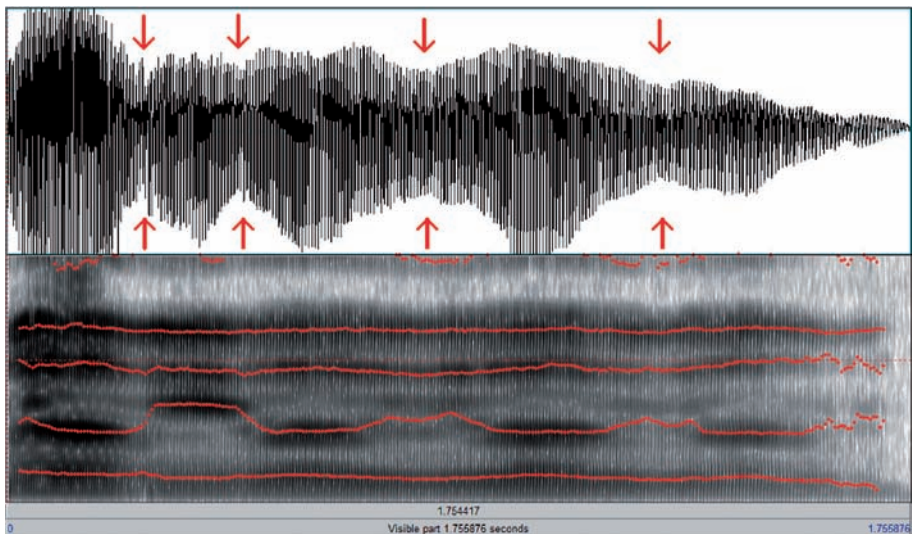
There were six APs which have not been reported in the L1 acquisition:

1. Incomplete Consonant Closure (ICC) – the articulators approach each other sufficiently enough so that the intended consonant phoneme can be discriminated, yet a certain degree of off-shot is produced e.g. “spodnie” /s̥pɔd̥n̥ɛ/ (“trousers”) (diacritics introduced by the first author). ICC is a mild under-articulation of the target consonant. It is most evident for stops but it may also occur with fricatives. ICC may be viewed as a **post-process** because even though the hearer may perceive the intended phoneme, the undershoot can be observed through the use of acoustic instrumentation. Figure 2 illustrates a trisyllabic string “bababa” pronounced as /bavaɣa/ with the second /b/ being spirantized (first circle) and the third /b/ being pronounced with ICC (second circle). We can see that ICC produces a wider pattern on a sound wave than a stop articulated without an AP, yet the sound wave is narrower than in spirantization. In acoustic terms, spirantization has a lower degree of sound wave approximation than ICC (approximation is the highest for stop phonemes). On a spectrogram, spirantization has a darker and more irregular signal than ICC. The signal intensity for ICC is less intense – there is very little intensity for voiceless stop phonemes and a very weak signal for voiced stops.

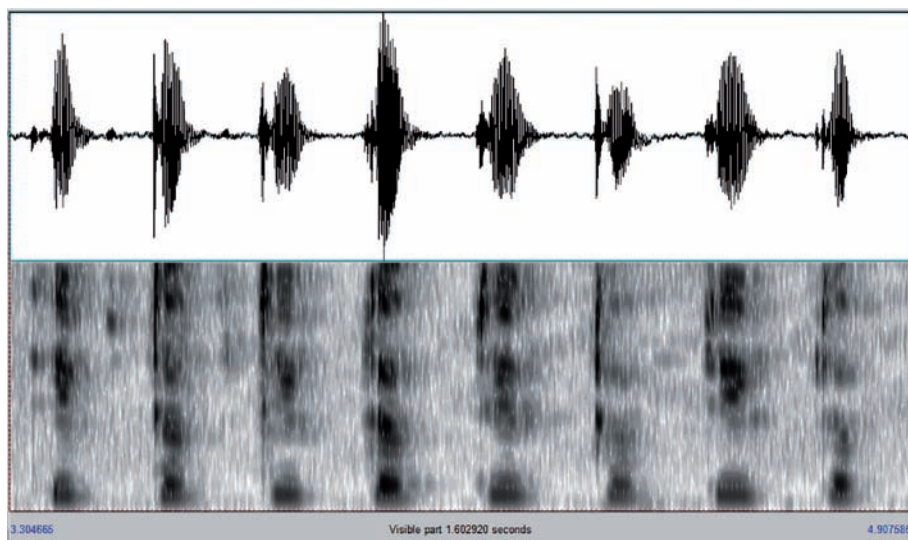


**Figure 2.** A trisyllabic string “bababa” pronounced as /bavaɣa/ with the second /b/ being spirantized and the third /b/ being pronounced with ICC

2. Consonant Approximation (CA) – an insufficient approximation of articulators that appears in positions in which a consonant is expected. Because the degree of closure in CA necessary to produce a consonant is so small, this AP can only be observed with a spectrogram and an acoustic wave. The sound wave narrows slightly in positions where an approximation of articulators is expected to produce a consonant, e.g. “dama ma makaka” /da:ˈaˈa ˈakaxi/ (“a lady has a macaque”) (symbols introduced by the first author). CA is a **pre-process** because it is not detected by the ear and can only be observed with acoustic instrumentation and the hearer cannot perceive which consonant phoneme is intended. Figure 3 shows CA in the phrase “tiptop tiptop...” produced by a TBI subject and Figure 5 depicts the same phrase produced by a control. Although no perceptually recognizable consonant is produced, both the acoustic wave and the spectrogram show traces of consonants. The approximation of the sound wave in the TBI patient is indicated with arrows as are the complete closures of the articulators marked by a considerable narrowing of the sound wave in the control subject. On a spectrogram of a TBI subject we can see changes in formant values in locations corresponding to the narrowings of an acoustic wave.



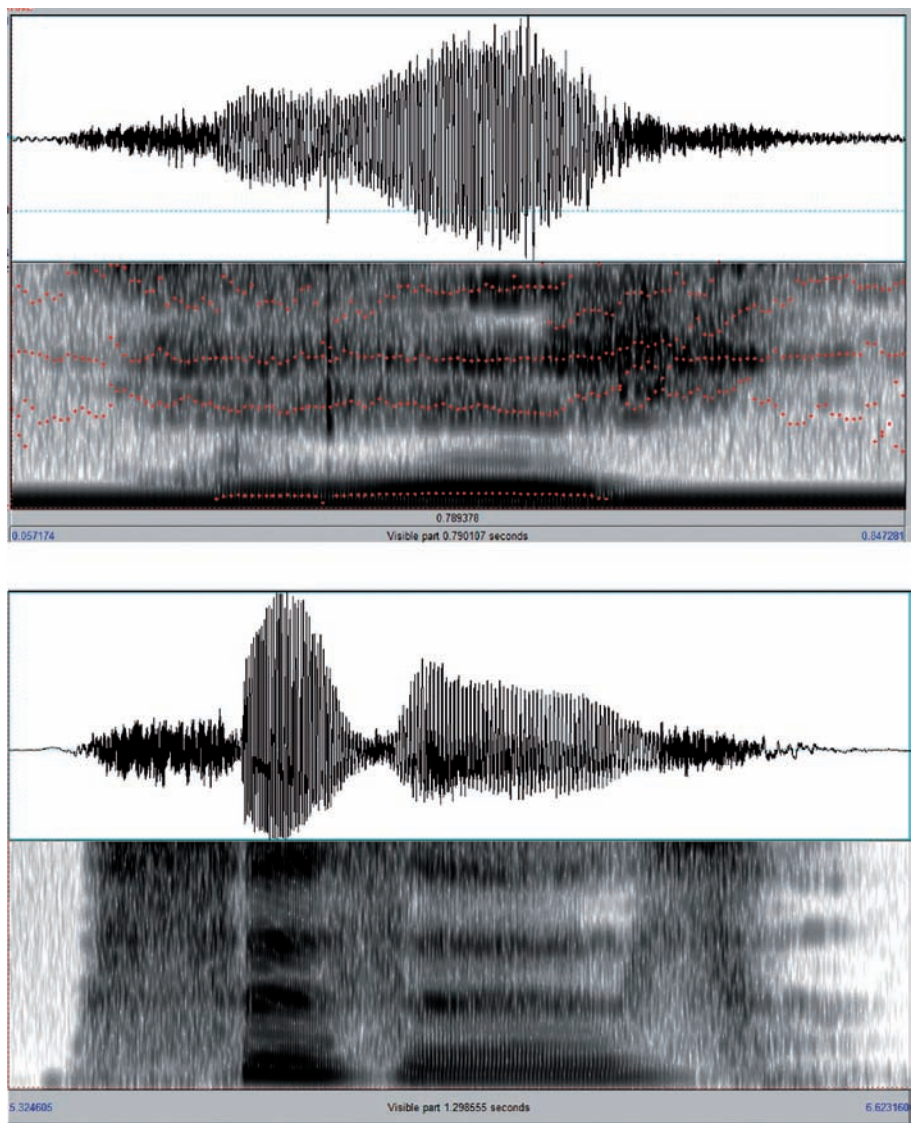
**Figure 3.** Consonant Approximation (CA) in a phrase “tiptop, tiptop...” produced by a TBI patient. Both the acoustic wave and the spectrogram show traces of consonants (indicated with arrows)



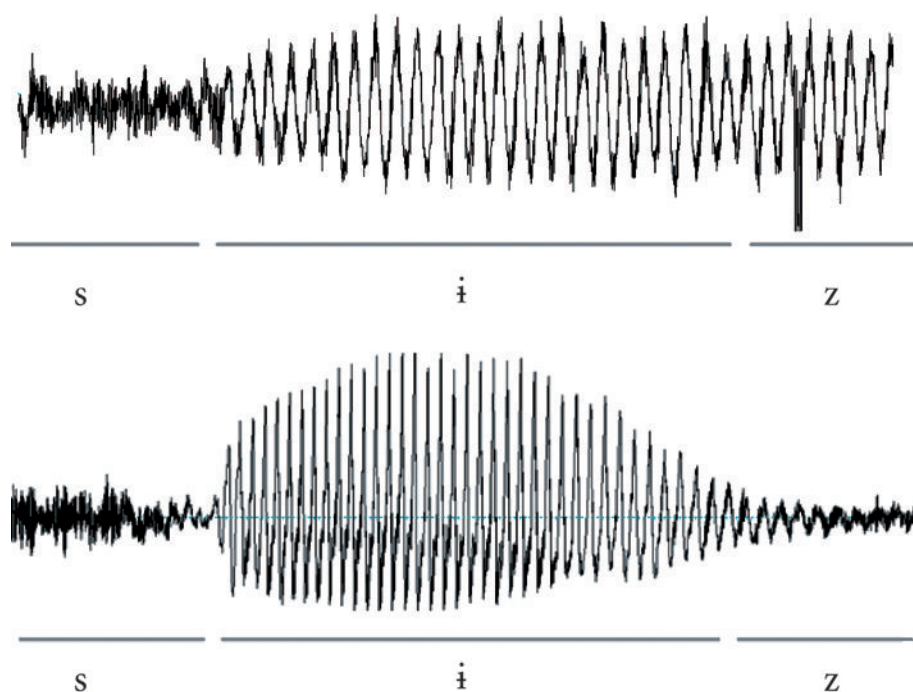
**Figure 4.** A phrase “tip-top, tip-top...” produced by a control subject. Complete closures of the articulators are marked by a considerable narrowing of the sound wave (top of the screen)

3. Vowel centralization – substitution of a vowel with schwa or /ɪ/. Having problems achieving maximum aperture, as well as extreme front and back positions, TBI individuals tend to articulate vowels as central and with a smaller degree of opening.
4. Glottalization of /x/ – voiceless velar fricatives are considered to be relatively difficult phonemes even though they are produced with a minimal raising of the posterodorsum. Therefore by glottalizing the TBI speaker is reducing the number of articulators needed to produce this sound (i.e. – excluding the back of the tongue).
5. Spirantization of vowels – friction in the course of vowel production when following a fricative, e.g. suddenly /'size:<sup>f</sup>/, sister /zɪ<sup>f</sup>zi/. TBI patients succeed in forming only a partial aperture for the vowel (although one can still recognize which vowel has been produced) however the turbulence from the preceding fricative continues in and overlaps with the acoustic space of the vowel. Figure 5 shows vowel spirantization in the loanword “scissors” by a Polish TBI patient and a control. The top of the figure shows that friction continues throughout the production of vowels for the TBI patient. Figure 6 presents a close-up image of a sound wave of the first vowel /ɪ/ pronounced by both the TBI speaker and the control as a Polish vowel /ɪ/. The vowel of the TBI patient contains a considerable amount of tone and noise associated

with friction or turbulence throughout the production of the whole word (the spectrogram image of the vowel is less regular because of noise), whereas these acoustic elements are not present in the vowel of the control subject (no friction is visible in the vowel, the spectrogram image of the vowel is regular).



**Figure 5.** Top: Vowel spirantization in the word “scissors” by a TBI subject. Bottom: The word “scissors” produced by a control subject



**Figure 6.** A close-up image of a sound wave of /i/ in the word “scissors” pronounced as Polish /i/ produced by a TBI patient (top) and a control subject (bottom)

6. Consonant epenthesis – insertion of the consonants /m/, /n/, /w/, /h/ or /ç/, most commonly in word-initial position.

#### 4. Discussion

The results of this study indicate that TBI individuals simplified problematic sounds by applying processes used by children in L1 acquisition. Yet, nearly one-third of these APs were either rare or have not been documented for children’s speech. This discrepancy results from the fact that post-coma patients tend to apply those APs which help them overcome problems connected with their organic articulatory dysfunctions. Some of the idiosyncratic APs, such as ICC and spirantization, appeared very frequently among the TBI subjects.

Połączyńska-Fischer (2006) extended the commonly accepted list of L1 processes consisting primarily of substitutions, assimilations and changes in syllable structure by adding processes which appear in TBI speech that have not been



reported in the L1 acquisition literature. The two additional categories of processes are underarticulations and changes in the articulatory force. Table 3 illustrates the expanded classification of APs in TBI dysarthria with twelve APs which are either infrequent or have not been found in L1 acquisition.

**Table 3.** Five classes of AP apperaring in TBI dysarthria with 12 APs which are rare or not-reported for L1 acquisition

Class of AP	Infrequent in L1 acquisition	Not reported for L1 acquisition
Substitutions	spirantization of stops backing gliding of fricatives gliding of affricates	glottalization of /x/
Assimilations		vowel spirantization
Changes in the syllable structure		consonant epenthesis
Underarticulations		Incomplete Consonant Closure – ICC Consonant Approximation – CA vowel centralization
Articulatory force changes	strong articulation	weak articulation

As previously mentioned, ICC which has not been discussed in the L1 acquisition literature, turned out to be the most common AP in TBI speech. Theoretically speaking, this process could occur within the first three months of life, when the child’s oral tract is underdeveloped and there is little control over the fibres of the tongue. Nevertheless, this is a purely theoretical hypothesis as children do not babble at that early stage of development. (Canonical babbling usually begins between seven to nine months of age) (Dziubalska-Kořaczyk 2002). Furthermore, it is most interesting to observe how ICC was distributed in different word positions. In word-initial position, ICC was the most frequent among all the processes used by the TBI patients – 14.5%. In word-medial position it was the third most frequent process (11.9%), after consonant cluster reduction (16.4%) and spirantization (21.1%). In word-final position, ICC was the fourth most frequent AP (8.2%) but it was preceded by processes such as consonant deletion that scored 27.2% (!) and consonant cluster reduction – 9.1%. This finding indicates that the patients used the least radical of all process in word-initial position, where, according to PHB, the need, burden, and force of communication are the highest (Diver 1979; Tobin 1997). It was previously mentioned that ICC is a post-process: i.e. even though a consonant is imprecisely articulated, none of the common natural L1 phonological processes appears and the ICC consonant is still perceived within the boundaries of the target phoneme. Conversely, in word-final

position – where, according to PHB, the need, burden, and force of communication are the lowest (Diver 1979; Tobin 1997) – we find more extreme processes, such as omissions. Thus, word position and the degree of communicative strength influenced the distribution of ICC in the TBI patients' speech in a way which appears to be contrary to and the reverse of L1 acquisition.

The second most common AP in TBI dysarthria was spirantization which is uncommon in L1 acquisition (Ingram 1975; Tobin 1997). Post-coma patients exhibit difficulties controlling the musculature of their articulators, especially the tongue. For this reason, they have problems with the production of consonants in general and even stops in particular. Stops are considered to be the easiest consonants, hence voiceless stops appear the earliest in child language followed by homorganic voiceless fricatives and affricates later followed by their voiced counterparts. Nasal consonants, articulary, are oral stops where the air stream follows the natural pattern of the air flow while being expelled through the nasal cavity (Tobin 1997). They produce the sharpest contrast with vowel sounds that emerge first (Vihman 1996:117). Indeed, the "Stopping" of fricatives and affricates is among the most frequent functional process found in early L1 acquisition (Tobin 1997). Fricatives require more articulatory control, skill and accuracy in order to sustain an uninterrupted narrow separation between two articulators over a given period of time, without changing the degree of the gap between the two articulators. Therefore, in L1, fricatives are acquired after their homorganic stop counterparts. TBI individuals, with less articulatory control, skill and accuracy, consequently substitute stops with homorganic fricatives (which is the exact opposite of what children do in typical L1 acquisition), e.g. *nogi* /noyi/ ("legs"), *szukali* /ʃuxali/ ("were looking for", third person pl.), *OK* /o'xej/. Just as spirantization is rare among children, the opposite process, stopping, is among the most common and frequent processes found in children's speech. This is particularly true in word and syllable initial position where there is a strong tendency across languages to favour stops (Tobin 1997).

The third most frequent idiosyncratic process for TBI subjects was vowel centralization. This AP also has been observed in various other dysarthria studies, relative to normal speech (Ziegler & von Cramon 1983; Wesimer et al. 2000, 2001; Bunton & Weismer 2001; Ansel & Kent 1992; Higgins & Hodge 2002; Liu et al. 2005; Turner et al. 2005; Sapir et al. 2007). Vowel centralization is also rare among children who prefer to substitute high and mid front and back vowels with the most neutral vowel /a/ which is the easiest and most natural vowel to produce, has maximal aperture and sonority, and is the most common vowel across languages (Stemberger 1992; Tobin 1997). Notwithstanding, Kent & Murray (1982) report that most vocalic utterances made by the child between three to nine months of age have a mid-front or central location and correspond to a neutral vowel or



schwa in adult speech. This discrepancy can be accounted for by the following major dissimilarities between adults and children: a high position of the larynx, which results in a short vocal tract (hence, higher formants in children), a shorter pharynx with little space for the tongue dorsum to manoeuvre, a large size of the tongue in relation to the oral cavity (thus, little room for vertical movements), insufficient control over the fibres of the tongue, gradual (not right-angle, as in adults) bend of the tongue and a close proximity of the velum with the epiglottis, making oral exhalation impossible without a considerable opening of the lower jaw (Kent & Murray 1982; Vihman 1996; Vorperian et al. 2005). Therefore, the child is ill-equipped to produce the complex articulatory gestures of adult speech at this early stage of development. These anatomical limitations result in a very small vowel space corresponding to the adults' mid-front and central vowel phonemes. Obviously, the anatomy of TBI patients has assumed its adult shape. Still, they tend to centralize vowels, just as infants aged three to nine months. This is caused by the fact that the post-coma dysarthric individuals suffer from a debility of the tongue brought about by the partial disruption of the hypoglossal nerve. Thus, they are incapable of moving their tongue to assume more extreme positions (needed for lowering, raising, backing and fronting) and they centralize their vowels instead. This process is rare in children because, by the time the child starts to produce their canonical babble (around seven to nine months of age) (Dziubalska-Kończak 2002), significant alternations in the anatomical and physiological structure of the child's vocal tract take place between four and six months (Hsu et al. 2000) – the facial skeleton grows larger, increasing the space for the tongue's movements, and neural maturation in the centres involved in vocal production occur, so that the child can gradually increase the diversity of articulated vowels. Once the child learns to open the mouth wider, the vowel /a/ becomes the most favoured sound to appear in the substitutions of vowels.

According to PHB, vowel centralization denotes a lower point on the zero to five hierarchy of sounds, where zero stands for maximum stricture (stops) and five stands for maximum aperture as for the vowel /a/ (Tobin 1997). We classified vowels as centralized when they were realized as /ə/ or /ɪ/, e.g. *krzesło* /'ʃis'wo/ ('chair'), *spodnie* /spix'nə/ ('trousers'). We looked at the first (F1) and the second (F2) formant values of vowels. For instance, the vowel /e/ was assessed as centralized when it was articulated within standard average F-values of /i/ or /ə/.

It is not surprising that the consonant-vowel-(consonant) (CV(C)) collocation is the favoured syllabic unit in most, if not all, languages. This CV(C) syllable sequence provides a most efficient synergetic compromise for the 'mini-max' struggle between the human and communication factors inherent to the theory of Phonology as Human Behavior (Diver 1979; Tobin 1997). The CV(C) syllable opens with a consonant – or 'phoneme of stricture' – which impedes the airflow,

but also provides a clear-cut communicative distinction (attested to by the greater number of consonants than vowels in languages and the existence of syllabaries: consonant-only alphabets such as in Semitic and Sanskrit). The initial consonant flanks an audible vowel – or “phoneme of aperture” – which provides a free flow of air as the syllabic nucleus, or keystone, which, metaphorically speaking, allows us to breathe, accumulate, and organize the airstream for further communication in the form of another consonant = or “phoneme of stricture”. In addition, the vowel in the keystone position provides the maximum amount of acoustic cues in its transition with the phonemes of stricture concerning the perception and the active articulators of both the flanking consonants preceding and following it: thus, the CV(C) represents an efficient synergetic solution for maximum communication with minimal effort.

Połczyńska, Tobin and Sapir (2009) have shown that two types of idiosyncratic APs are strongly correlated in TBI dysarthria – vowel centralization and incomplete stop articulation. The authors found that post-TBI individuals who centralize vowels also have problems with producing stop consonants which require complete stricture because both APs are directly related to the debility of the tongue. Two processes were included in the rubric of incomplete stop articulation – spirantization and ICC of stops because in both APs TBI patients have difficulties achieving zero (minimum) stricture. Połczyńska, Tobin and Sapir (2009) found that the MOD dysarthric subjects had more instances of incomplete stop production and vowel centralization, while the MIL dysarthric subjects applied incomplete stop articulation only occasionally and did not centralize vowels at all. These findings indicate that the correlation between vowel centralization and incomplete stop articulation is especially strong in moderate dysarthria, where the two APs constituted 33.9% of 26.3 types of APs used by this group.

According to Tobin (2002) and others, backing (pronunciation of front sounds with back articulators) is less common and appears later in first language acquisition than its opposite process – fronting or apicalization. Backing may often appear when there are problems with the control of the apex. This process is infrequent because the apex of the tongue, along with the lips, are the most adroit and sensitive articulators while the dorsum of the tongue is less adroit. Thus, the opposite process, fronting, appears much more frequently in typical L1 acquisition. Fronting was also quite frequent in the TBI subjects – it immediately preceded backing on the ranking scale of all the processes used by the TBI patients. It was used like an AP by the TBI group to avoid the excitation of the posterodorsum that was the most frequently affected part of the tongue.

In light of the rather similar frequencies found for the opposite processes of backing versus fronting in the present study, one must therefore ask the question: Why were these two contradictory processes almost equal in distribution? There is

probably no clear-cut answer to this question. The key might be related to the general debility of the tongue. The patients might have been trying to overcome articulatory difficulties (the human factor) in various ways, without omitting problematic sounds (deletions are the least communicative process) (the communication factor). These operations might sometimes appear to be performed at random: i.e. moving a difficult or problematic phoneme from one weak region to another. In other words, the apex and the back of the tongue may be equally as weak or weak to a similar degree in the TBI subjects unlike in children who tend to control the apex better than the dorsal regions of the tongue. Further research based on a larger and more diversified population of TBI patients using a larger corpus of experimental data more carefully controlled for phonetic variables related to potential co-articulation factors may provide a more definitive answer to this question should a similar distributional frequency between the processes of backing and fronting be found. It must be mentioned, however, that previous research in PHB has shown that language in general and developmental and clinical phonology in particular represent a constant synergetic struggle to achieve maximum communication through minimal effort. Tobin (1997, 2002; 2009) has found that the human factor (laziness, economy, efficiency) usually predominates but is overridden by the communication factor in order to enhance comprehensibility and other communicative factors especially in L1 acquisition and in the speech and hearing clinic.

Articulatory force alternations appeared only in patients with MOD. Strong articulation was usually applied to the hyperarticulation of a problematic phoneme, as in “komputer” /kom'p<sub>11</sub>uteř/ (“a computer”) and “Szczepan” /ʃɛ'p<sub>11</sub>ã/ (a male name), where the plosive /p/ required a complete stricture of the articulators that was problematic for the TBI patients. The TBI subjects in our study sometimes tried to articulate sounds very clearly, to the extent that they hyperarticulated them. Although strong articulation is rather infrequent, it appeared the most frequently in word-medial position (three occurrences) and it never appeared in word-final position where the communicative force is the lowest (Diver 1979; Tobin 1997). Conversely, weak articulation which is a very quiet articulation or a whisper and which occasionally occurs in patients with poor phonation, appeared a bit more commonly in word-final position (two occurrences) than in word-medial position (one occurrence) and it was not applied in word-initial position. Weak articulations appeared in patients like P4 and 5 whose phonation is poor, leading to the lack of vocal energy to continue voice until the end of the word/phrase. It is particularly interesting that hyperarticulation was not the most frequent in word-initial position – this might be because we naturally tend to articulate more clearly initially where “it counts” and then we hyperarticulate

in medial position to enhance understanding and then naturally ease off in word-final position.

Consonant epenthesis is a process which is not frequently found in children's speech. Consonants are more difficult to produce than vowels, thus they are not good candidates to facilitate speech, i.e. epenthetic vowels are usually more common than epenthetic consonants. Yet, they did occur in TBI speech. The phonemes /m/, /n/, /w/, /h/ and, less often, /ɛ/ were inserted epenthetically. This process appears mainly in those individuals who suffer from breathing-articulation co-ordination difficulties. This AP occurs most frequently word-medially. The results of the experiment support this observation – consonant epenthesis was used in 2.2% of all instances in this position. Consonant epenthesis was the most common in word-medial position with the consonant /w/ (e.g. “but” /bwat/), especially before labial or labio-dorsal consonants. The results of an earlier study (Połczyńska 2006) indicate that this process is much less favoured in word-final position, where nasals were added. The fact that nasals were frequently inserted, especially in the initial and final position, could be attributed to the lack of control over the velum. This way, the patients produced sounds that were the most natural for them.

Consonant Approximation occurred only in patients with MOD. It was most commonly used in word-medial position. Word-medial position requires more effort in producing transitions between syllables usually involving consonant codas and consonant onsets per syllable. As suggested earlier, CA is a pre-process: i.e. it is an indicator of a consonant that can be traced acoustically by following the sound wave but it is not perceived by the hearer as a specific phoneme.

The patients occasionally used the process of gliding of fricatives and, less commonly, they also glided affricates substituting the obstruents with /w/ or /j/. The former is a more extreme version of the more common L1 process gliding of liquids – the process of gliding entails a greater aperture requiring less control of the articulatory musculature, e.g. “fishes” /ʃɪʃs/, “TV” /ti'wi/ (the human factor). Gliding of affricates is even more extreme in terms of the transition from a complete closure to a significantly higher degree of aperture used in the production of /w/ and /j/. Gliding of fricatives and affricates was applied more often by the patients than gliding of liquids, though the latter process is more common in L1 acquisition. Gliding of affricates and plosives is rarely reported in child language. The patients used these processes to preserve the number of sounds in the word and to avoid omissions, e.g. “baby” /wɛɪʔɪ/ (the communication factor).

Vowel spirantization was used only by patients with MOD when a spirant or a stop preceded a vowel. An incomplete aperture for a vowel was formed, accompanied by a certain degree of overlapping turbulence or friction from the

preceding fricative, e.g. “kupował garnitur” /kɨ'pɔ<sup>f</sup>ʋɔ<sup>f</sup> kaʃ'nituʃ/ (“[he] was buying a suit”). This AP was caused by problems with controlling articulators in the transition from one sound to another. Vowel spirantization was used less frequently and less consistently than other APs. Processes in transitions from one sound to another can be referred to as assimilatory or co-articulatory.

Yet another process which occurred in the TBI group but is not commonly reported in L1 acquisition, is glottalization of /x/. Polish has a voiceless velar fricative phoneme /x/ (that requires the raising of the posterodorsum of the tongue) and lacks the voiceless glottal fricative /h/. According to PHB glottalization minimizes the number of articulators by excluding the tongue (Tobin 1997). The patients with more advanced post-traumatic symptoms occasionally used this process when the sound was followed by /a/. The low central vowel was the best environment for the glottalization of /x/ to appear since it did not involve any additional tongue movements, but merely involved the lowering of the jaw necessary for the production of /a/. This way, the subjects save the energy used to lift the anterodorsum, the least adroit part of the tongue.

As we observed various favorings in different positions of the word, we would like to provide a brief summary of these favorings: less radical processes appear word-initially (e.g. ICC), whereas more radical processes appear word-finally (consonant deletion). This is because word-initial position has the highest communicative power, while word-final position has the weakest communicative power.

## 5. Conclusions

In order to communicate, adult TBI patients simplify problematic sounds by applying processes that appear in L1 acquisition. Yet, some of these processes are rare in children's speech. TBI individual use processes which help them compensate for the debility of the musculature of their articulators. For this reason APs in TBI dysarthria are more regular and predictable than processes appearing in L1 acquisition. The TBI subjects in our study used twelve APs which are either highly idiosyncratic or do not appear in L1 acquisition. APs which are infrequent in L1 are: spirantization of stops, weak and strong articulation, backing, gliding of fricatives, and gliding of affricates. APs which are not attested to in L1 are: ICC, vowel centralization, CA, glottalization of /x/, vowel spirantization and consonant epenthesis. The most commonly used process in TBI dysarthria was ICC which has not been documented in the L1 literature. Among all the APs used by the TBI group, more than a quarter were rare or non-existent in L1 acquisition.

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# A phonological analysis of the lexicon of a literary work

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The present study is a part of a larger research project that analyzed the language of the classic Russian novel *Мастер и Маргарита* (*The Master and Margarita*) by Mikhail Bulgakov (1988, 1995) on the phonological, lexical, semantic, and discourse levels. This study offers a sign-oriented approach for the study of a literary work. We applied this approach to the analysis of different systems of language in order to confirm our hypothesis that there is an interconnection of the natural and the supernatural in Bulgakov's novel, sometimes to such an extent that it is impossible to distinguish between them.

## 1. Introduction

In order to understand why we chose to analyze the language of the natural and the supernatural in the novel *The Master and Margarita* (1988, 1995) we find it necessary to say the following:

As its etymology suggests, the word “supernatural” is defined by the word “natural”: supernatural denotes that which is above nature (“supra” – from Latin “above”). It is something beyond the power or laws of nature, i.e. a phenomenon that cannot be explained by natural or physical laws is described as being supernatural. In our study the category of “the supernatural” covers such notions as “the unreal”, “the abnormal”, “the mysterious”, “the phantasmagoric”, “the unknown”, “the fantastic”. “The natural” as it is used in my work refers to “the normal”, “the real”, “the realistic”, “the known”.

The supernatural, the irrational and the fantastic have always been an integral part of Russian and Soviet culture. In Russia, a country which historically has a high level of illiteracy, folklore is a significant component of the national culture. Some aspects of the folklore, including beliefs in the supernatural, survive even now in rural areas. This folk heritage is reflected in literature, art and music.

The folk tale, the *bytovaia skazka*, which reflects traditional Russian social attitudes and sense of humor, has its origins in ancient ritual and myth (*nechistaia sila* – ‘the unclean force’ and its manifestations: *rusalka* – ‘the mermaid’, *leshyi* – ‘wood spirit’, *chyort* – ‘the devil’.). Along with folklore, ancient literature and the Bible are the main sources of the supernatural in Russian literature. There are frequent references to diabolic and supernatural forces in the works of Alexander Pushkin and Nikolai Gogol. In their works Saltykov-Shchedrin, Dostoevsky, Turgenev, Lev Tolstoi, the Symbolists, and Aleksei Tolstoi continued Pushkin’s and Gogol’s tradition of using the supernatural (Tertz 1979). The Russian needed something to believe in (not just in God but also in any surrogate – the revolution, the motherland, a state, so on).

Mikhail Bulgakov worked on his novel *The Master and Margarita* throughout one of the darkest years of Russian history. These were the years when the secret police penetrated into all areas of life, years of the expansion of the system of “corrective labor camps”, and the liquidation of the intelligentsia. It was at this time that Stalin controlled almost every aspect of Soviet life through a series of purges and mass arrests. At a 1937 meeting Stalin arranged “an intensification of the struggle” against “enemies of the people”. It was during Stalin’s time that the Bolsheviks modified supernatural symbols and techniques to their political propaganda. The Bolsheviks succeeded in establishing a fear of the Stalin’s name, image and his words. Andrey Sinyavsky (Abram Tertz 1976: 95) writes that under Stalin

Russia became filled with “enemies,” no less literal for being invisible, who acted like devils and blurred the line between reality and fantasy. Stalin had brought into play (possibly without suspecting it) the magic powers contained in the language...

At this period *The Socialist Realism* doctrine in literature and the arts was introduced. This doctrine demanded that writers depict “the miracles” taking place in Soviet Russia. The mass media informed Soviet citizens daily about “the miracles of heroism” being performed by the Stakhanovites, and about “the miracles” of the soldiers guarding Soviet borders. Stalin was described in supernatural terms: all – knowing, all – powerful. Specially composed “folklore” gave Stalin magical powers. Free experimentation with the language of the arts was prohibited. A cliché-filled language was used on all levels of Soviet discourse, from poetry and fiction to newspapers and Party documents. Bulgakov began the first version of *The Master and Margarita* in 1929 and worked on his novel throughout the Stalin regime. Bulgakov made the final revisions of the novel a few weeks before his death in 1940.

The events in the novel take place on three levels, which are interconnected. The historical narrative is set in Jerusalem, where Pontius Pilate condemns to death a man, Jeshua, whom he knows to be innocent. The contemporary narrative is set

in Moscow, where the Master and Margarita live and where the Master has written a novel about Pilate, but cannot publish it. The third, fantastic level introduces the devil, who appears in Moscow with a group of supernatural creatures. There is a mysterious atmosphere in the novel, because the most supernatural events prove to be realistic, while apparently totally realistic facts become supernatural. People keep getting arrested, disappearing, and then turn up again; objects move around and transport individuals here and there; things *happen*, people do not *make* them happen. This can be attributed to the supernatural (the devil), until the reader realizes that the agent causing things to happen is the secret police, rather than any unnatural force.

In this paper I will focus on a phonological analysis of the lexicon of Bulgakov's novel based on the theory *Phonology as Human Behavior*. I will present a phonological analysis of the semantic fields of the natural and the supernatural in the lexicon of the novel using the theory *Phonology as Human Behavior in general* (Diver 1979, 1995; Davis 1984/1987; Tobin 1997, 2009) and the application of the theory to a specific poetic text *Jabberwocky* with many neologisms in particular. (Tobin 1997: ch. 6).

We will apply the principle of iconicity – the connection between form and meaning – in the phonological analysis of the language of the natural and the supernatural.

The notion of the linguistic sign is based on the concept of an arbitrary connection between the signal (*signifiant*) and the meaning (*signifié*) of the linguistic sign. However the concept of the arbitrariness of the linguistic sign may be opposed to the polaric concept of iconicity. This latter concept implies an inherent relation between any given feature of a language and its meaning. The principle of iconicity reflects the systematic correspondence of form and meaning, which may also be one of the general properties of human languages (Tobin 1990). According to Tobin (1990: 249), there is “the inseparable connection between the signal and the invariant meaning, the signifier and the signified, of the linguistic sign” and this connection may express varying degrees of arbitrariness and iconicity.

Previous work done in the Columbia School framework (Tobin 1990, 1994) showed an iconic connection between the form and the meaning in the English system of comparative and superlative formations (*more* +X /*most* +X; X+*er*/X+*est*) in contracted versus non-contracted constructions (*do not*/*don't*), and for possessive forms (X's Y/*the* Y of X). The fused synthetic forms were found marked for the semantic feature of “Semantic Integrality”, while the independent periphrastic forms were unmarked for this feature.

Here we can speak about an:

... iconic connection between the signals themselves and their markedness value. The signs which are marked for the more complex or specific meaning are usually larger and more complex in their signal or form while the signs which are

unmarked and are simpler and less specific in their meaning are usually simpler in their signal or form as well. (Tobin 1994: 74)

In our analysis we also used the Jakobsonian semiotic concept of markedness – *the marked member of the opposition makes a claim for a certain semantic feature, while the unmarked member is neutral for that feature* elaborated upon for all levels of language in Andrews (1989) and Tobin (1985, 1988, 1989, 1997, 1999, 2000, 2002).

According to the theory of *Phonology as Human Behavior*, the concept of markedness is related to the set of distinctive features associated with phonemes. Unmarked signs/sounds contain the simplest or the most basic aspects of distinctive features, while marked sounds contain features which are more complex and more difficult to produce (for example, voiceless sounds are unmarked, they require one set of oral articulators (oral), while voiced and nasal sounds are marked because they require two or more sets of articulators (voiced – oral + vocal folds, nasals – oral + vocal folds and/or uvula).

We examined the lexicon of Bulgakov's text from the point of view *the Natural versus the Supernatural*. Our goal was to examine whether there was an iconic connection between the form and the meaning, i.e. to see whether each group (*the Lexicon of the Natural* and *the Lexicon of the Supernatural*) had specific distinctive phonological characteristics of its own.

Our assumption is that *the Lexicon of the Natural* in the novel (e.g. *chelovek* – a man, *noski* – socks, *okno* – window, *nezhno* – tenderly) is unmarked both in meaning and in form which means that the lexical items will be not only unmarked semantically but also phonologically (i.e. will be simpler in their phonological form). On the other hand, we assume that the lexicon of the novel that is limited to the realm of *the Supernatural* (e.g. *chertovshina* – 'devilish things', *prividenie* – 'apparition', *besovski* – 'accursed', *chudo* – 'miracle') will be more marked in both meaning and phonological form. These words have a more complex and specific meaning, attract more attention and require more effort for their production.

While collecting the data we realized that there is a third category of words in Bulgakov's novel: words whose semantic domain was broader in comparison with the first two categories. Each word of the third category denotes the realms of both the *Natural* and the *Supernatural* simultaneously (e.g. *strannost'* – 'strange thing', *potriasenie* – 'shock', *proishodut* – 'happen', *neozhidanno* – 'suddenly'). The words in this group are polysemous; the polaric notions of the natural and the supernatural "converge/meet" within the words of the group. In other words, *the Lexicon of both the Natural and the Supernatural* of the novel straddles the natural and the supernatural. These words are semantically more complex, and they can be more complex phonologically as well. Within themselves they have marked characteristics of *the Supernatural* and unmarked characteristics of *the Natural*.

In fact, *The Lexicon of both the Natural and the Supernatural* presents an iconic realization of the message of the novel (an interconnection of the natural and the supernatural, sometimes to such an extent that it is impossible to distinguish between them).

Therefore, our phonological analysis includes three semantic groups of words from the text of *The Master and Margarita: the Lexicon of the Natural* – 100 words that denote only the realm of the natural (see Appendix 1), *the Lexicon of the Supernatural* – 100 words that denote only the realm of the supernatural (see Appendix 2) and *the Lexicon of both the Natural and the Supernatural* – 100 words that denote the realms of both the natural and the supernatural (see Appendix 3). We examined these three classes of words to see whether each class had specific distinctive phonological characteristics of its own, and if so, whether there was an iconic connection between the form and the meaning. Our first hypothesis is that the unmarked signs that are less specific in their meaning (*the Lexicon of the Natural*) should be simpler in their phonological form as well.

At the same time (our second hypothesis) we expect that the words that are semantically marked (*the Lexicon of the Supernatural*) will be more marked phonologically as well.

We also assume (the third hypothesis) that the third group of words *the Lexicon of both the Natural and the Supernatural* in the text of the novel should be phonologically even more marked than the first two groups for the following reason: the words in *the Lexicon of both the Natural and the Supernatural* are bi-functional because the same word can describe both the natural and the supernatural; they are semantically more complex, and we assumed they would be more complex phonologically.

We assume that there is an interconnection of the natural and the supernatural in the novel, sometimes to such an extent that it is impossible to distinguish between them. There is a non-random distribution of different systems in the language of the natural and the supernatural in the novel. While the supernatural and the natural are interconnected, what is threatening comes not from the supernatural forces, but from the reality of Soviet life in the 1930s.

Our phonological analysis of the lexicon of Bulgakov's novel *The Master and Margarita* is based on the theory of *Phonology as Human Behavior (PHB)*. On the one hand, we follow Diver (1979, 1995), Davis (1984/1987), and Tobin (1997, 2009) by taking the same criteria for the analysis, on the other hand, our analysis is not based on the entire lexicon either of speakers or of dictionaries, but rather presents a text analysis similar to one found in Tobin (1997: Chapter six) which includes the analysis of the entire text as well as the analysis of neologisms. In our text analysis we do not analyze the entire text of the novel but rather the semantically motivated categories of *the Lexicon of the Natural*, *the Lexicon of the Supernatural* and *the Lexicon of both the Natural and the Supernatural* to support the message of the

entire text – an interconnection of the natural and the supernatural, sometimes to such an extent that it is impossible to distinguish between them.

2. The distribution of monosyllabic, bisyllabic and polysyllabic words

We first examined the text of *The Master and Margarita* for the distribution of monosyllabic, bisyllabic and polysyllabic words.

We divide all three groups of words into monosyllabic, bisyllabic and polysyllabic words. The more syllables there are per word, the more marked the word is considered. In synthetic languages, like Russian and Latin, with rich inflectional morphology, not only are monosyllabic words unmarked but bisyllabic words are relatively unmarked too, while for both analytical and synthetic languages trisyllabic and polysyllabic words are marked.

Our assumption is – the longer the word the more specific and omplex its meaning.

Table 1. Number of syllables per word – *Lexicon of the Natural*

Number of syllables	Number of words
One	5
Two	36
More than two	59
Total	100

Table 2. Number of syllables per word – *Lexicon of the Supernatural*

Number of syllables	Number of words
One	8
Two	17
More than two	75
Total	100

Table 3. Number of syllables per word – *Lexicon of both the Natural and the Supernatural*

Number of syllables	Number of words
One	5
Two	12
More than two	83
Total	100

Tables 1–3 show that there is almost the same number of the least marked monosyllabic words in every group: 5 out of 100 in *the Lexicon of the Natural*, 8 out of 100 in *the Lexicon of the Supernatural* and 5 out of 100 in *the Lexicon of both the Natural and the Supernatural*.

We see that the biggest number of relatively unmarked bisyllabic words is evident for the unmarked category of *the Lexicon of the Natural*: there are 36 words out of 100. There is a sharp drop in the use of bisyllabic words in *the Lexicon of both the Natural and the Supernatural* and *the Lexicon of the Supernatural* – 12 and 17 words respectively. At the same time there is an increased favoring in the exploitation of marked trisyllabic and polysyllabic words in *the Lexicon of the Supernatural* and in *the Lexicon of both the Natural and the Supernatural* – 75 and 83 respectively.

We see the drop in the number of relatively unmarked bisyllabic words for *the Lexicon of the Supernatural* – 17 – Table 2 and *the Lexicon of both the Natural and the Supernatural* – 12 – Table 3 together with the increase in the use of marked trisyllabic and polysyllabic words in these two groups: 75 – *lexicon of the supernatural* and 83 – *Lexicon of both the natural and the supernatural*. This can be explained by an iconic connection between form and meaning. The words in these two groups are semantically marked, i.e. their meaning is more specific and complex; they attract more attention and therefore, require more effort for their production. Thus, the words in *the Lexicon of the Supernatural* and *the Lexicon of both the Natural and the Supernatural* are marked not only semantically, but also phonologically. Therefore, our assumption that the words that represent *the Natural* will be relatively less marked both in meaning and in form and that *the Lexicon of the Supernatural* and *the Lexicon of Both the Natural and the Supernatural* are marked in meaning and in form is supported by the data about the number of syllables per word.

The very existence of the third lexical category in the text of the novel containing both the natural and the supernatural in the same word iconically supports our hypothesis about an interconnection of the natural and the supernatural. *The Lexicon of both the Natural and the Supernatural* is the most marked category with regard to the distribution of syllables (Table 3). These words have more than one function in the text; they are used for the description of both natural and supernatural events. Moreover, sometimes the natural and the supernatural are interconnected to such an extent that they are confused and the reader is not always sure whether natural or supernatural forces cause the described event.

Tables 1–3 demonstrate that the non-random distribution of the bisyllabic and polysyllabic words in all three groups presents an iconic connection between the signs themselves and their markedness value.



### 3. Additional articulators in word-initial position

We continued our phonological analysis of the novel with the examination of the distribution of additional articulators in word-initial position for all three groups of words in Bulgakov's novel: *the Lexicon of the Natural*, *the Lexicon of the Supernatural* and *the Lexicon of both the Natural and the Supernatural*.

The analysis of the number of sets of additional articulators in word-initial position was done for English (Diver 1979), Italian (Davis 1984/1987), Hebrew (Tobin 1997) as well as in other different languages belonging to diverse language families (Tobin 2002).

Word-initial position has the highest communicative load and here we expect to see an almost random distribution of phonemes. Diver (1979) and Davis (1984/1987) and Tobin (1997, 2002) examined the distribution of initial consonants in monosyllabic words, stems and roots taken from the general lexicon of English, Italian and Hebrew respectively. They discovered a slight disfavoring of additional articulators in word-initial position. Diver claims (1979:174–5) that producing voiced sounds involves controlling two sets of articulators (oral articulators and the vocal folds), i.e. trying to do two things at once. This added difficulty is also reflected in the distribution/skewing.

We extended my phonological analysis and examined the distribution of additional articulators in word-initial position for all three groups of words of the novel: *the Lexicon of the Natural*, *the Lexicon of the Supernatural* and *the Lexicon of both the Natural and the Supernatural*.

The distribution of additional articulators in word-initial position for these three groups of words is presented in Tables 4–8. In our analysis voiced and nasal phonemes (two and three sets of articulators respectively -oral articulators, the vocal folds) are examined in comparison with voiceless phonemes (one set of articulators). Voicing serves as a specific distinctive feature. Voiceless phonemes are unmarked, while voiced and nasal phonemes are marked for the specific distinctive feature (voicing and nasality respectively).

In order to give a total picture of the distribution of consonants in word-initial position we included the data about the distribution of the palatalized consonants. (Tables 4–8)

Palatalization is a prevalent phonemic feature of the Russian language. There are two parallel systems: non-palatalized and palatalized consonants. Almost every consonant in Russian has its phonemic palatalized counterpart, except for š and ž which are already palatalized by definition. There is no additional palatalization (the same articulators in adjacent phonemic environment are disfavored).

Palatalization includes (as a phonemic process) an additional set of articulators (like voiced and nasal consonants, palatalized consonants require an additional

movement of the musculature, i.e. an additional gesture or an additional set of articulators). However, we have examined the distribution of the initial palatalized consonants separately, because all three groups of consonants can be palatalized (palatalized voiceless consonants will require two sets of articulators, palatalized voiced consonants – three sets of articulators, and palatalized nasal consonants will require four sets of articulators).

Palatalization in Russian neutralizes the unmarked non-palatalized consonants, thus making the palatalized consonants even more strongly marked. Tables 4–8 show that the distribution of the non-palatalized consonants in word-initial position is almost equal throughout the categories of the text (*the Natural*, *the Supernatural*, and the category of both *the Natural* and *the Supernatural*). Tables 5, 7, and 9 show that there is an increase in the number of the palatalized consonants in *the Lexicon of both the Natural and the Supernatural* (20) in comparison with the *Lexicon of the Natural* (17). The number is even higher in *the Lexicon of the Supernatural* (23). The above data support the hypothesis that the words that are more marked semantically will be more marked phonologically.

Our analysis of the unmarked category of *the Lexicon of the Natural* supports the principle of the disfavoring of additional articulators at the word-initial position.

**Table 4.** Number of sets of articulators in word-initial position *Lexicon of the Natural*

							Totals	%	Mean
Voiceless	p 12	t 4	k 6	f 0	s 11	š 2	35–56%	56	9.3%
Voiced	b 3	d 1	g 5	v 4	z 4	ž 4	21–34%	44	5.7%
Nasals	m 3	n 3					6–10%		5%
							62	100	

**Table 5.** Distribution of the palatalized consonants in word-initial position – *Lexicon of the Natural*

					Totals
Voiceless palatalized	p' 4	t' 3		s' 2	9
Voiced palatalized	B' 2	d' 1	v' 1	z' 1	5
Nasals palatalized		n' 3			3
					17

Table 4 shows the distribution of additional articulators in *the Lexicon of the Natural*. 62 of the 100 words from this group begin with obstruents (stops, fricatives, affricatives), the phonemes for which voice-voiceless opposition serves as a distinctive phonemic feature. The phonemes that require the activation of only one set of articulators are favored (56%), followed by 34% with two sets

of articulators (voiced) and then only 10% which require three and four sets of articulators (nasals).

We see that the phonemes which require the activation of more than one set of articulators are disfavored – 44 %. The phonemes that require the activation of only one set of articulators are favored 56%.

The distribution of the palatalized initial consonants is similar to the general distribution of voiceless, voiced and nasal initial consonants in this lexical category of *the Natural* – Table 5. The largest is the number of voiceless palatalized consonants (voiceless phonemes are the easiest to palatalize) – 9, followed by 5 voiced palatalized consonants with two sets of articulators + palatalization, and then only 3 words (that start with nasals) which require three sets of articulators + palatalization.

According to the theory of *Phonology as Human Behavior*, we see an iconic connection between form and meaning: the words in this group are unmarked semantically and are unmarked in their phonological form.

Table 6 presents distribution of voiceless, voiced consonants, and nasals in the word initial position in the category of *the Supernatural*. The phonemes that require the activation of only one set of articulators are favored (58%), followed by 39% with two sets of articulators (voiced) and then only 3% which require three and four sets of articulators (nasals).

**Table 6.** Number of sets of articulators in word-initial position  
*Lexicon of the Supernatural*

												Totals	%	Mean	
Voiceless	p	15	t	3	k	7	f	0	s	9	š	0	34–58%	58	9.7%
Voiced	b	6	d	5	g	1	v	3	z	6	ž	2	23–39%	42	5.6%
Nasals	m	0	n	2									2–3%		1.5%
												59	100		

**Table 7.** Distribution of the palatalized consonants in word-initial position – *Lexicon of the Supernatural*

				Totals
Voiceless palatalized	pʼ	1		1
Voiced palatalized	Bʼ	3	vʼ 6	9
Nasals palatalized	mʼ	1	nʼ 12	13
				23

Although the data in Table 6 is similar to the distribution of the phonemes in the word initial position in *the Lexicon of the Natural* (Table 6), the distribution of the palatalized consonants in the word-initial position makes the difference.

There is only one voiceless palatalized consonant (voiceless phonemes are the easiest to palatalize), followed by 9 voiced palatalized consonants with two sets of articulators + palatalization, and then 13 words (that start with nasals) which require three sets of articulators + palatalization.

The words that are more marked semantically (*the Lexicon of the Supernatural*) have a more complex, marked phonological form. According to Tobin (1997:316, n.7),

Voiced sounds provide more acoustic and perceptual information – they provide resonance and have acoustic formants that provide the primary auditory and communicative information most necessary for speech perception. Therefore, the need for maximum communication justifies the extra effort necessary for making voiced sounds. In other words, they are easier to hear in general and over distances in particular. It should also be remembered that, when affricates – more difficult and complex consonants – appear in the phonemic inventory of a language, the voiceless affricates precede the voiced ones, provided that the latter become part of the inventory.

Although we found that the third category is comprised of both the natural and the supernatural in the same word (*the Lexicon of both the Natural and the Supernatural*) was the most marked with regard to the distribution of syllables – polysyllabic words were obviously favored (see Section 1), this is not always the case in the distribution of the number of sets of articulators.

**Table 8.** Number of sets of articulators in word-initial position *Lexicon of both the Supernatural and the Natural*

							Totals	%	Mean
Voiceless	p 21	t 4	k 3	f 0	s 6	š 0	34–64%	64	10.7%
Voiced	b 0	d 1	g 2	v 7	z 8	ž 0	17–32%	36	5.3%
Nasals	m 2	n 0					2–4%		2%
							53	100	

**Table 9.** Distribution of the palatalized consonants in word-initial position – *Lexicon of both the Natural and the Supernatural*

			Totals
Voiceless palatalized	p' 1	t' 3	4
Voiced palatalized	b' 4	d' 2	6
Nasals palatalized	m' 1	n' 9	10
			20

We just want to remind the reader that the words in the third category are bi-functional; they are similar to the general lexicon of the novel denoting both the supernatural (they are more complex and specific semantically and phonologically) and the natural (the words are unmarked both semantically and phonologically).

The data presented in Table 8 demonstrate the favoring of the phonemes that require only one set of articulators – 64% with the obvious disfavoring of the phonemes which require the activation of two and three sets of articulators – 36%.

The data in Tables 5, 7, and in 9 also demonstrate a non-random distribution of the apical palatalized nasal phoneme /n/. We know that the production of nasal phonemes involves three sets of articulators: they are voiced, oral stops, produced with the lowering of the uvula. Palatalized nasals have four sets of articulators. Although marked nasal phonemes are complex and require three sets of articulators, they are natural sounds because physiologically they were designed to emit air through the nose for breathing (Tobin 1997a: 317).

Despite the fact that the nasals are complex sounds articulatorily, they are also natural sounds. As we know, the vocal and nasal tracts were originally designed for eating and breathing, respectively. Talking came later and was superimposed on the same musculature...nasals have a unique pattern of formants like vowels and give strong acoustic cues (sometimes even stronger than vowels) in speech production and reception...It should be pointed out to the reader that the production of nasals involves three sets of articulators: nasals are all voiced (+1), oral stops (+2), produced with the uvula (+3), which lowers to allow most of the air to enter the nasal passage but leaves enough air in the oral passage to determine which set of active oral articulators is being used: bilabial *m*, apical *n*, or palatal *ɲ*. Furthermore, the bilabial nasal *m* is acquired from the onset as a natural result of an infant nursing (hence the appearance of *m* in so many languages for the word *mother* or the term *am* in baby talk across languages and cultures to indicate food). Finally, nasals have a unique pattern of formants like vowels and give strong acoustic cues (sometimes even stronger than vowels) in speech production and reception (Raphael et al. 1974; Raphael et al. 1975; Dorman et al. 1974).

We see that the greatest number of the apical palatalized nasal consonants (13) is found in *the Lexicon of the Supernatural* of the novel. This category is the most marked semantically and phonologically. The labial and apical palatalized nasals, as natural as they may be, require the simultaneous control of four sets of articulators which makes them more complex (marked). The number slightly decreases in *the Lexicon of both the Natural and the Supernatural* (10), followed by *the Lexicon of the Natural* (3). These data support my assumption about *the Lexicon of both the Natural and the Supernatural*. This category is not always as marked as the marked

category of *the Lexicon of the Supernatural*, because the former includes words denoting the natural. *The Lexicon of the Supernatural* never includes the natural, it is the most marked category, the number of the complex phonemes is the largest.

It is worth examining the distribution of the nasal consonant in word-initial position in comparison with other apical consonants:

**Table 10.** The distribution of the apical consonants (including palatalized in word-initial position)

	<i>Lexicon of the Natural</i>	<i>Lexicon of the Supernatural</i>	<i>Lexicon of both the Natural and the Supernatural</i>
/t/	7	3	7
/d/	3	5	3
/n/	9	15	12

The data (Table 10) show that there are more nasal phonemes than voiced phonemes in the unmarked category of *the Lexicon of the Natural*, although there are more unmarked voiceless phonemes; whereas in the semantically marked category of *the Lexicon the Supernatural* the most marked nasal phonemes are highly favored and their number is even larger than the number of the marked voiced phonemes. In *the Lexicon of both the Natural and the Supernatural*, the category of words of the novel that shares the characteristics of both the natural and the supernatural, we can see a distribution of the apical consonants similar to *the Lexicon of the Natural*, although there are more marked nasal phonemes than marked voiced phonemes. In fact, the distribution of the nasals is almost the same as in the category of *the Supernatural* which further supports the fact that the words in this category have the characteristics of both the natural and the supernatural.

The data in this section firmly support the hypothesized iconic connection between the markedness value of all three lexical categories and the number of sets of articulators both for palatalized and non-palatalized phonemes.

#### 4. Distribution of phonemes of constriction in word-initial position with reference to active articulators

The previous analyses (Diver 1979, 1995; Davis 1987; Tobin 1997, 2009) have shown that it is not enough to learn the characteristics of the phonemes of any language in order to understand their distribution in language. It is more important to know how the sounds are produced.

We examined the distribution of phonemes of constriction in word initial position with reference to active articulators: lips, apex, anterodorsum, posterodorsum; and the corresponding phonemes: /p, b, f, m/ – lips, /t, d, n, r, s, z, l/ – apex, /š, ž/ – anterodorsum, /k, g/ – posterodorsum (in our analysis we combined the phonemes produce by the anterodorsum and the posterodorsum because their number is so small).

Tables 11–13 demonstrate the distribution of the Russian consonants in the lexicon of *The Master and Margarita* with regard to active articulators in word-initial position.

Table 11. Active articulators in word-initial position – *Lexicon of the Natural*

	Visible phonemes	Non-visible phonemes		Total
	Lips [p, b, f, v, m]	Apex [t, d, n, r, s, z, l]	A-P-Dorsum [k, g, š, ž]	
No	27	46	17	90
%	30%	51%	19%	100%

Table 12. Active articulators in word-initial position – *Lexicon of the Supernatural*

	Visible phonemes	Non-visible phonemes		Total
	Lips [p, b, f, v, m]	Apex [t, d, n, r, s, z, ch l]	A-P-Dorsum [k, g, š, ž]	
No	34	50	9	93
%	36%	54%	10%	100%

Table 13. Active articulators in word-initial position – *Lexicon of both the Natural and the Supernatural*

	Visible phonemes	Non-visible phonemes		Total
	Lips [p, b, f, v, m]	Apex [t, d, n, r, s, z, l]	A-P-Dorsum [k, g, š, ž]	
No	34	41	5	80
%	43%	51%	6%	100%

The data demonstrate that the apical phonemes are favored in all three categories of words: *the Lexicon of the Natural* – 51%, *the Lexicon of the Supernatural* – 54% and in *the Lexicon of both the Natural and the Supernatural* – 51%. The apical phonemes are unmarked because they require minimum effort for their production; the apex is the easiest to control of all active articulators, the most flexible, and the most sensitive of the active articulators.

The labials are the next favored: the number of the labials is the lowest in the unmarked category of *the Lexicon of the Natural* – 30%, the number then increases in the marked category of *the Lexicon of the Supernatural* – 36% and the number is even higher in *the Lexicon of both the Natural and the Supernatural* (it can be the most marked category) – 43%.

Just as the number of labial/visible phonemes increases, the number of the phonemes produced by the Antero/Postero dorsum decreases. Diver (1979), Davis (1984/1987) and Tobin (1997) found a slight favoring of visible phonemes in initial word, stem and root positions in English, Italian and Hebrew respectively. Again we can speak about an iconic connection between the meaning of the word and its phonological form. The fact that there is an increase in the number of visible phonemes supports the hypothesis that the more semantically marked the category, the more visible phonemes can be found in word-initial position.

There is an increase in the number of the visible phonemes in word-initial position in *the Lexicon of the Supernatural* in comparison with *the Lexicon of the Natural* because the words that denote the supernatural are not only semantically marked but also have their own specific phonological feature – in word-initial position they favor visible phonemes which carry the greatest burden of communication and attract more attention (they can be both seen and heard). The even greater favoring of the visible phonemes in the words that denote both *the natural* and *the supernatural* is due to the fact that these words are bi-functional, the same word can describe both the natural and the supernatural; they are semantically more specific and complex, and they are more complex phonologically as well. Within themselves they have the marked characteristics of *the Supernatural* and the unmarked characteristics of *the Natural*.

## 5. The distribution of the explosive mobile phonemes

Both Diver (1979) and Davis (1987) postulated and validated the following principle: explosive phonemes are favored in initial position in monosyllabic words and stems. Tobin's examination (1997: 88–144) of the prelexical category of the triconsonantal (CCC) root system in Hebrew also supports this principle. All three analyses examined the general lexicon.

The following tables demonstrate the distribution the explosive mobile phonemes in our three semantically based groups of words of the novel.

We discovered the same favoring of the explosive mobile phonemes /p, b, t, d, k, g/ over the stable non-explosive phonemes /f, v, s, z, š, ž/ in all three groups of words that we examined: *the Lexicon of the Natural* – 61%, this favoring is slightly



weaker in *the Lexicon of the Supernatural* – 59% followed by *the Lexicon of both the Natural and the Supernatural* – 55%.

The non-explosive phonemes are disfavored in all three groups of words.

However, the number of non-explosive phonemes in *the Lexicon of Both the Natural and the Supernatural* is slightly larger – 45% in comparison to the number of non-explosives within *the Lexicon the Supernatural* and *the Lexicon of the Natural* – 41% and 39% respectively). These words (*the Lexicon of Both the Natural and the Supernatural*) are semantically richer and demand more attention. Again we see that there is an iconic connection between the meaning of the word and its phonological form.

Table 14. Explosive phonemes in word-initial position – *Lexicon of the Natural*

	Explosive [p, b, t, d, k, g]	Non-explosive [f, v, s, z, š, ž]	Total
No	41	26	67
%	61%	39%	100%

Table 15. Explosive phonemes in word-initial position – *Lexicon of the Supernatural*

	Explosive [p, b, t, d, k, g]	Non-explosive [f, v, s, z, š, ž]	Total
No	41	28	69
%	59%	41%	100%

Table 16. Explosive phonemes in word-initial position – *Lexicon of both the Natural and the Supernatural*

	Explosive [p, b, t, d, k, g]	Non-explosive [f, v, s, z, š, ž]	Total
No	42	35	77
%	55%	45%	100%

6. The distribution of the consonant clusters [R+Consonant] or [Consonant +R] and [Vowel+R+Vowel] or [R+Vowel]

Tables 17–19 demonstrate the distribution of specific consonant clusters. We counted the number of the consonant clusters [R+Consonant] or [Consonant +R] in the words of three semantically based groups, as well as the syllables [Vowel+R+Vowel] or [R+Vowel].

The articulation of the trilled (R) in Russian is considered difficult to acquire. It is one of the last sounds a child learns to produce.

The articulation of the trill plus consonant or consonant plus trill (RC/CR) requires even a greater effort. On the other hand, the combination of vowel plus trill plus vowel or trill plus vowel (VRV/RV) requires less effort. That explains the fact that semantically marked words from *the Lexicon of both the Natural and the Supernatural* and *the Lexicon of the Supernatural* of the novel are connected with the more phonologically marked forms RC or CR as opposed to *the Lexicon of the Natural* (semantically unmarked) where there is an obvious favoring of the combination VRV/RV which is easier to pronounce (unmarked).

**Table 17.** 'R+Consonant' or 'Consonant +R' and 'Vowel+R+Vowel' or 'R+Vowel' Clusters – *Lexicon of the Natural*

	RC/CR	VRV/RV	Total
No	17	15	32
%	53%	47%	100%

**Table 18.** 'R+Consonant' or 'Consonant +R' and 'Vowel+R+Vowel' or 'R+Vowel' Clusters – *Lexicon of the Supernatural*

	RC/CR	VRV/RV	Total
No	25	8	33
%	76%	24%	100%

**Table 19.** 'R+Consonant' or 'Consonant +R' and 'Vowel+R+Vowel' or 'R+Vowel' Clusters – *Lexicon of both the Natural and the Supernatural*

	RC/CR	VRV/RV	Total
No	34	4	38

Table 17–19 show the following: {RC/CR} for the *Lexicon of the Natural* – only 53%; then the number of {RC/CR} increases to 76% for the *Lexicon of the Supernatural* followed by even higher increase – 89% in *the Lexicon of both the Natural and the Supernatural*. Our assumption that the words that are more marked semantically will have more specific, complex and marked forms (which make the words more prominent and salient in perception) has been supported again.

## 7. Conclusions

We believe that the phonological analysis of the lexicon of the novel confirmed our hypothesis of the interconnection of the natural and the supernatural in *The Master and Margarita*, sometimes to such an extent that it is impossible to distinguish between them.

We demonstrated an iconic connection between form and meaning:

*The Lexicon of the Supernatural* as well as *the Lexicon of both the Natural and the Supernatural* of the novel were always more marked than the natural (this category was unmarked, it never included the words that denote the supernatural). In all cases we observe inherent, iconic connections between the meaning of the words of the two marked groups (*the Lexicon of the Supernatural* and *the Lexicon of both the Natural and the Supernatural*) and their phonological features. These two groups were more marked than *the Lexicon of the Natural*:

- there is a favoring of trisyllabic and polysyllabic words in *the Lexicon of the Supernatural* and *the Lexicon of both the Natural and the Supernatural* of the novel;
- there is a favoring in the phonemes with additional articulators when we speak about *the Lexicon of the Supernatural* and *the Lexicon of both the Natural and the Supernatural*;
- there is an obvious favoring of more difficult and complex phonemes in general and initial visible phonemes in *the Lexicon of the Supernatural* and in *the Lexicon of both the Natural and the Supernatural*; and
- there is a favoring of the more difficult consonant clusters RC/CR in *the Lexicon of the Supernatural* and *the Lexicon of both the Natural and the Supernatural*.

The following assumptions were supported: The most unmarked both phonologically and semantically was the category of *the Natural*. *The Lexicon of the Supernatural* and *the Lexicon of both the Natural and the Supernatural* are more marked than and *the Lexicon of the Natural* in various ways and to various degrees.

Although the connection between form and meaning in a linguistic sign are considered to be arbitrary (Saussure 1916), previous research (Diver 1979; Davis 1984/1987; Tobin 1997) has shown that there is an iconic connection in the general lexicon on the root/stem/word level. This analysis shows that when signs are organized into semantically motivated lexical systems there is an even greater iconic connection between the elements of form and meaning of a linguistic sign based on the value of markedness of this sign. The more marked the category is semantically, the more the words in this category are phonologically marked.

## Appendix 1

### *Lexicon of the Natural*

Russian	English	Russian	English
1. Grazhdanin	1. Men	42. zlobno	42. angry
2. shliapa	2. fedora	43. obespechil	43. guaranteed
3. ten'	3. shade	44. kompaniya	44. group
4. chelovek	4. man	45. privetlivo	45. politely
5. skamyeyka	5. bench	46. podrobnosti	46. details
6. professor	6. professor	47. voprosy	47. inquiries
7. priyatno	7. pleased	48. riumka	48. glass
8. skazal	8. said	49. minuta	49. minute
9. segodnia	9. today	50. kuski	50. bits
10. otvetil	10. replied	51. patefon	51. phonograph
11. lodozhka	11. rowboat	52. potzelovat'	52. kiss
12. rasskaz	12. tale	53. spal'nya	53. bedroom
13. sovershenno	13. whatsoever	54. kvartira	54. apartment
14. nikogda	14. never	55. ploxo'	55. bad
15. balkon	15. balcony	56. vdova	56. widow
16. istoriya	16. story	57. nachl'stvo	57. bosses
17. obyknovenniy'	17. ordinary	58. zerkalo	58. mirror
18. noski	18. socks	59. direktor	59. director
19. svet	19. light	60. tarelka	60. plate
20. steklianniy'	20. glass	61. glaza	61. eyes
21. bulyzhnik	21. cobblestones	62. gorod	62. city
22. besheniy'	22. irresistible	63. tiho	63. softly
23. posledni'	23. for the last time	64. vremia	64. time
24. predmet	24. object	65. mysl'	65. thought
25. golova	25. head	66. nyanya	66. nurse
26. zhenskie	26. women's	67. doctor	67. doctor
27. zaderzhka	27. try to stop	68. bely'	68. white
28. vecherni'	28. evening	69. utro	69. morning
29. opaseniya	29. fears	70. poyimat'	70. catch
30. trudniy'	30. difficult	71. horosho	71. fine
31. nebol'shaya	31. small	72. vydat'	72. give
32. restoran	32. restaurant	73. karandash	73. pencil
33. pisatel'	33. writer	74. spokoyino	74. peaceful
34. molodo'	34. young	75. okno	75. window
35. shofior	35. driver	76. hlopoty	76. problems
36. loshad'	36. horse	77. rukopisi	77. papers
37. tolpa	37. crowd	78. zhilploshchad'	78. living space
38. skandal	38. scandal	79. zaivlenie	79. claim
39. klinika	39. clinic	80. pel'meni	80. pelmeni
40. polotentza	40. towels	81. perevodchik	81. interpreter
41. zdorov	41. fine	82. borshch	82. borshch

Russian	English	Russian	English
83. passport	83. passport	92. lodoni	92. palms
84. stul	84. chair	93. lediano'	93. ice
85. p'yaniy'	85. a drunk	94. nezhno	94. tenderly
86. zhil'tzy	86. residents	95. listki	95. sheets of paper
87. kabinet	87. office	96. sochinit'	96. compose
88. grafin	88. carafe	97. avtor	97. author
89. se'chas	89. now	98. tovarishchi	98. comrades
90. teatr	90. theater	99. lichnost'	99. personality
91. strashnoye	91. worst	100. zhurnal	100. magazine

## Appendix 2

### *Lexicon of the Supernatural*

Russian	English
1. Chyort	1. devil
2. chertovshchina	2. devilish things
3. sverhestestvenniy'	3. supernatural
4. adski'	4. hellish
5. privedenie	5. apparition
6. bezzhiznennaya (golova)	6. lifeless (head)
7. suevernaya	7. superstitious
8. koldovstvo	8. witchcraft
9. prokliaty'	9. accursed
10. nechelovecheski'	10. superhuman
11. v preispodnyuyu	11. in the underworld
12. poganaya (kvaptira)	12. vile (apartment)
13. chudo	13. miracle
14. pochudilis'	14. it seemed
15. iz ognediylshashchego	15. from fire-breathing
16. nevidanny'	16. unheard-of
17. sverhbystry'	17. superfast
18. mereshchitza	18. imagining
19. porcha	19. out of order, ?
20. besovski'	20. accursed
21. nechisto	21. sinister
22. strah	22. fear
23. uzhas	23. terror
24. nevidannoye	24. weird
25. neyestestvennoye	25. unnatural
26. skverna	26. sins

27. snovideniye	27. dream
28. volshebnye	28. by magic
29. nesusvetnoye	29. unimaginable
30. gospodi	30. Oh, my god
31. v drugoi mir	31. for another world
32. k leshemu	32. to hell
33. prevratilsia	33. turned into
34. bog	34. god
35. ved'ma	35. witch
36. s predchuvstviem	36. premonition
37. veshchi'	37. prophetic
38. tainstvennaya	38. mysterious
39. nevidima	39. invisible
40. letun'ya	40. her flying
41. zlopoluchny'	41. ill-fated
42. konyok-gorbunok	42. humpbacked horse
43. boginia	43. goddess
44. rusalki	44. mermaids
45. kozlonogi'	45. goat-legged creature
46. charodei'	46. wizard
47. s piatym izmereniyem	47. with the fifth dimension
48. polnolunie	48. full moon
49. nesushchestvuyushchi'	49. non-existent
50. nebutie	50. non-being
51. vzbesivshayasya	51. crazed
52. vsesilen	52. omnipotent
53. isparilas'	53. evaporated
54. bessledno	54. without a trace
55. krovozhadny'	55. bloodthirsty
56. trehkliaty	56. thrice-cursed
57. okayanniye	57. infernal
58. videniya	58. visions
59. prichudlivo	59. rather strange
60. chrevovezhchatel'ski'	60. ventriloquist
61. zhut'	61. terror
62. bessmerten	62. immortal
63. duh	63. spirit
64. prorok	64. prophet
65. beschislennye	65. countless
66. neslyhannaya	66. unprecedented
67. porok	67. vice
68. bezdna	68. abyss
69. vezdesushchi'	69. omnipresent
70. ozhili	70. came to life
71. predvkushenie	71. anticipation
72. zagadochny'	72. mysterious

73. sviato'	73. holy
74. vечно	74. forever
75. navsegda	75. forever
76. rokovye	76. fatal
77. zloschastniy'	77. ill-fated
78. neveroyatnoe	78. appalling
79. potriasaiushchie	79. amazing
80. koshmarnoe	80. terrible
81. kanal'ya	81. scoundrel
82. videnie	82. vision
83. zagadochny'	83. mysterious
84. dusha	84. soul
85. sginul	85. disappeared
86. domovo'	86. goblin (house-manager)
87. zacharovanniy'	87. in a trance
88. tiysyachegoloviy'	88. thousand-headed
89. pomelo	89. broom
90. leshi'	90. ill wind
91. zloveshchi'	91. ominous
92. kudesnik	92. wonder-worker
93. namaz	93. prayerful obeisance
94. omolodili	94. restored youth
95. bozhestvo	95. divinity
96. zhretz	96. the high priest
97. satana	97. satan
98. drakon	98. dragon
99. vampir	99. vampire
100. neptun	100. neptune

## Appendix 3

### *Lexicon of both the Natural and the Supernatural*

1. odnazhdy	1. one ...evening	13. vdrug	13. suddenly
2. chyorny	2. black	14. oslepitel'no	14. blinding
3. strannost'	3. strange thing	15. otvratitel'noe	15. loathsome
4. strashniy	4. terrible	16. neizvestny'	16. stranger
5. prikliuchilas'	5. happened	17. udivitel'ny'	17. amazed
6. vnezapno	6. suddenly	18. mnogoznachitel'no	18. meaningful
7. napugalo	7. frightened	19. izumlenie	19. astonishment
8. poblednel	8. turned pale	20. izvlech	20. to get out
9. glumlivaya	9. jeering	21. tragicheski	21. tragically
10. trevoga	10. alarm	22. szhigat'	22. cremate
11. drozhali	11. shaking	23. trevozhnye	23. uneasy
12. izumlenie	12. astonishment	24. zlobno	24. glumly

25. preuvelichenie	25. exaggeration	64. sverknulo	64. flashed
26. ugrozhaet	26. threat	65. bezmolvny'	65. wordless
27. otrezhut	27. will be cut off	66. nedoumenie	66. bewildered
28. besshumno	28. noiselessly	67. predstavil	67. imagined
29. chertili	29. black birds	68. chuvstvovalos'	68. was felt
chernye ptitzy	were circling	69. neozhidanno	69. suddenly
30. zasheptal	30. whispered	70. gnil'	70. decay
31. vstrevozhennno	31. anxiously	71. opasnost'	71. danger
32. nepriyatniy'	32. unpleasant	72. poko'nitza	72. the dead girl
33. provalilsia	33. disappeared	73. nechisti'y'	73. evil
34. somnitel'ny'	34. dubious	74. ochutilsia	74. found himself
35. zlodeiski'	35. villainous	75. vzdragival	75. shaddered
36. paskudny'	36. fault	76. devalas'	76. has gone
37. omerzitel'niy'	37. odious	77. nesooobraznoe	77. nonsensical
38. pomertveli	38. became dead	78. temnaia	78. dark
39. ognenny'	39. full of fire	79. proishodili	79. happened
40. oblachenny'	40. wearing	80. klyk	80. fang
41. vzdrognul	41. shuddered	81. voobrazhenie	81. imagination
42. poholodel	42. turned cold	82. neponiatnosti	82. things I don't understand
43. zmeya	43. viper	83. oshelomlenie	83. stupefied
44. potryasyonny'	44. astonished	84. kladbishche	84. cemetery
45. molniya	45. lightning	85. t'ma	85. darkness
46. ploho'	46. bad	86. beskonechnaia	86. endless
47. bessledno	47. without a trace	87. prekratilas'	87. was stopped
48. provalilsia	48. vanished	88. polnoch	88. midnight
49. obnaruzhilas'	49. turned up	89. bezgolovy'	89. headless
50. neizvestny'	50. unknown	90. dikovinny'	90. strange
51. poiavlenie	51. appearance	91. krovavy'	91. bloody
52. zakochenel	52. froze	92. tishina	92. silence
53. ostolbenel	53. struck dumb	93. osharashen	93. astonished
54. somnitel'ny'	54. questionable	94. prah	94. dust
55. merknut'	55. to fade	95. tlenie	95. decay
56. udivitel'ny'	56. amazing	96. potriashenie	96. studendous
57. potryashenie	57. shock	97. pepel	97. ashes
58. podozritel'ny'	58. suspicious	98. zakosteneli	98. stiffened
59. porazil	59. bowled	99. nesmetnye	99. priceless
60. oshelomlenniy'	60. dumbfounded	100. zarodilos'	100. became an experience
61. okazalis'	61. turned out		
62. voznik	62. appeared		
63. skvernye	63. nasty		

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# Name index

## A

Anderson, J.M. 50, 53, 63  
 Andrews, E. 178, 270  
 Ansel, B. 257  
 Ayers, G.E. 197

## B

Baayen, H. 54, 59  
 Balk-Smit Duyzentkunst, F. 1  
 Bates, E. 221  
 Baugh, A. 51  
 Beckman, M. 197, 201  
 Beedham, Ch. 58, 77  
 Bell, A. 185  
 Benveniste, E. 140  
 Bernaloff, R. 39  
 Blevins, J. 180  
 Boersma, P. 183, 248  
 Bolinger, D. 6, 49, 69, 187, 199, 207  
 Buk, E. 179  
 Bulgakov, M. 267–271, 274  
 Bybee, J. 59, 72

## C

Carstens, W.A.M. 97, 100  
 Chomsky, N. 3–4  
 Cohen, E. 179  
 Cohen, M. 17  
 Contini-Morava, E. 2, 5, 28, 50, 104, 178  
 Cornelis, L. 134  
 Cramon, D. von 248, 257  
 Culler, J. 45, 78

## D

Davis, B.L. 180–183, 185–187  
 Davis, J. 3–4, 28, 50, 98, 112–113, 169–171, 174, 178, 181–183, 186–187, 269, 271, 274, 279, 281, 284  
 De Stadler, L.G. 100  
 Diessel, H. 97, 128, 130, 133–134

Diver, W. 2, 4–6, 9, 19, 21, 50, 90, 98, 104, 111, 113, 121, 169–170, 174–175, 180, 183, 197, 222, 235, 246, 256–258, 260, 269, 271, 274, 279, 281, 284

Dostoevsky, F. 268

Dreer, I. 8, 10, 17, 27, 171

Dziubalska-Kořaczyk, K. 245–246, 256, 258

## E

Elffers, E. 131  
 Emerson, O.F. 51–52, 54, 62–63, 66–67  
 Enbe, C. 11–12, 176, 187–188, 197–199, 203, 208–214, 223

## F

Feinauer, I. 102  
 Freud, S. 1

## G

García, E.C. 6–7, 9, 21, 84–85, 94, 97–99, 133  
 Gelderen, E. van 132  
 Gogol, N. 268  
 Gorlach, M. 48, 67–68  
 Gorup, R.J. 98–99, 112, 133  
 Gouws, R. 102  
 Greenberg, J.H. 130  
 Gurlekian, J. 197, 199, 201, 210

## H

Halpern, O. 11–12, 176, 219, 223  
 Hanks, P. 60  
 Hervey, S.J.G. 178  
 Heuven, V.J. van 98–99, 115, 128  
 Higgins, C. 257  
 Hodge, M. 257  
 Hooper, J.B. 185  
 Horiguchi, S. 140, 144–145

Hsu, H.C. 258

Huffman, A. 8, 90, 106, 113

Hulbert, J.R. 52, 54, 56, 62, 67

## I

Ingram, D. 176, 220, 222–223, 245, 257

## J

Jakobson, R. 21, 101, 112, 178  
 Janssen, Th.A.J.M. 98, 104  
 Jember, G.K. 67  
 Jo, S. 139, 141–142  
 Johnson, Y. 141  
 Jones, D. 60  
 Jonge, B. de 6–7, 9, 11, 17, 20, 22, 45, 55, 83, 86, 91, 93–94, 115, 171, 189

## K

Kager, R. 176, 183  
 Kelly, C.A. 220  
 Kelman, C.A. 220  
 Kenstowicz, M. 182  
 Kent, R. 211, 257–258  
 Kenyon, J.S. 60  
 Kirsner, R.S. 8, 11, 97–99, 101, 103, 107, 110, 114–115, 128, 131–132, 134, 147, 151  
 Klein-Andreu, F. 50, 87, 178  
 Knott, T.A. 60  
 Kuno, S. 140–141, 147

## L

Labov, W. 94  
 Ladefoged, P. 60, 221  
 Langacker, R. 97, 99, 111–112, 132, 134  
 Lass, R. 50, 53, 63  
 Leeman-Bouix, D. 23  
 Levitt, A. 187  
 Liu, H. 257  
 Lorch, M. 220

**M**

MacNielage, P.F. 180–183,  
185–187  
Maddieson, I. 180  
Maes, A.A. 98  
Markides, A. 220, 222–223  
Martin, R. 18  
Martinet, A. 169  
Masuoka, T. 145, 147–149  
Matsushita, D. 141–142, 149  
Mauder, E. 10, 12  
McCawley, J. 4  
McGurk, H. 220  
McLeod, W. 60  
Mitchell, B. 63  
Moder, C.L. 72  
Moore, B.C.J. 220  
Moore, C.A. 221  
Moscoso del Prado  
    Martín, F. 54, 59  
Muller, Ch. 33–34, 41  
Müller, D. 100  
Murray, A.D. 257–258

**N**

Navarro Tomás, T. 199,  
201–202, 204, 206, 210  
Nitta, Y. 139, 141, 149  
Nölke, H. 18

**O**

Okutsu, K. 139, 141–142  
Oller, D.K. 181, 220  
Oren, E. 179  
Oron, N. 179

**P**

Partridge, E. 67  
Patterson, K. 59  
Penhallurick, J.M. 49  
Perelshstein, L. 179  
Pierrehumbert, J. 197, 210  
Półczyńska, M. 11–12, 245, 248,  
259–260

Pollington, S. 67  
Ponelis, F.A. 100, 102–103,  
112, 131  
Poplack, S. 18  
Prator, C. 60  
Pushkin, A. 268  
Putte, F. van 94

**Q**

Quirk, R. 50–52, 54, 56,  
62–64, 67

**R**

Redford, M.L. 187  
Redican, J. 181  
Reid, W. 3, 8, 19, 21, 24, 27, 33,  
35, 50, 55–57, 98, 104–107,  
132, 178  
Rietveld, A.C.M. 128  
Roberge, P.T. 117  
Robinett, B. 60  
Robinson, F.C. 63  
Ruark, J.L. 220  
Rudy, S. 178

**S**

Saif, S. 179  
Sakuma, K. 139–142  
Salmon, J. 179  
Saltykov-Shchedrin, M. 268  
Sapir, E. 257, 259  
Saussure, F. de 17, 19, 45,  
47–49, 56, 178, 284  
Schoonees, P.C. 100  
Schoor, J.I. van 103  
Shokty, L. 179  
Sinyavsky, A. 268  
Skeat, W.W. 67  
Slobin, D.I. 59  
Stalin, J. 268  
Stampe, D. 176, 183, 223,  
245–246  
Stemberger, J. 182, 257  
Sussman Goldberg, B. 50, 178

**T**

Teramura, H. 141  
Tertz, A. 268  
Tobin, Y. 3, 10–12, 28–29,  
35–36, 90, 101, 169–195,  
197, 214, 223, 234, 236–237,  
245–246, 256–260, 262,  
269–271, 274, 277–279,  
281, 284  
Tolstoi, L. 268  
Tomita, H. 141  
Touratier, Ch. 18  
Tubul, R. 179  
Turgenev, I. 268  
Turner, G. 257  
Tye-Murray, N. 220–222

**V**

Vanden Wyngaerd, G. 89, 91  
Vendler, Z. 9, 89  
Vihman, M.M. 220, 257–258  
Vorperian, H.K. 258

**W**

Wang, Q. 187  
Wang, Y. 248  
Waugh, L. 178  
Weismer, G. 248, 257  
Wells, J.C. 60  
Whalen, D. 187  
Whurr, R. 220  
Wrenn, Ch.I. 50–52, 54, 56,  
62–64, 67  
Wright, J. & E.M. 54, 67

**Y**

Yamada, T. 139, 145,  
149–150  
Yamamoto, H. 144  
Yoshida, K. 139, 141

**Z**

Ziegler, W. 248, 257  
Zlatic, L. 181

# Subject index

## A

Ablaut 45–46, 50–51, 58, 62–63, 66, 69–70, 77  
 Acoustic 53, 170, 172, 174, 180–181, 183, 185, 189, 199, 211, 221–222, 235–236, 248, 251–254, 259, 277–278  
 Acoustic features 170, 174, 180, 183  
 Acoustic medium 170, 181, 211  
 Acquisition 12, 47, 182, 188–190, 211, 221–223, 237, 245–249, 251, 255–257, 259–262  
 Active articulators 171–173, 182–185, 227, 259, 279–280  
 Addition 29, 46, 53, 98, 100, 104, 112, 127, 130, 172, 180–181, 198, 202, 204, 222, 224, 227, 233–234, 237, 246, 259  
 Additional articulator 174, 175, 184, 274, 275, 284  
 Adroit 172–173, 259, 262  
 Affricate 172–174, 243, 246, 248, 250, 256–257, 261–262, 277,  
 Afrikaans spelling 97, 124  
 Agent 11, 90, 134, 139–162, 164–165, 269  
 Agent defocus 11, 139, 147–148, 151, 154, 156, 159, 162  
 Agent focus 11, 139, 145, 151, 154–155, 162  
 Airflow 171, 173, 180, 187, 225, 235–236, 258  
 Allophone 170  
 Alternative to Occurrence 10, 20–21, 23, 41  
 Ambiguity 4, 38–39, 41, 139–140, 145

## AM-theory *see*

Autosegmental-Metrical Theory  
 Anterodorsum 171–172, 227, 237, 262, 280  
 Aperture 171–174, 180, 183–185, 253, 257–259, 261  
 Apex 172, 182–183, 185, 237, 259–260, 280  
 Approximant 172, 235  
 Articulatory 48, 170, 174, 180–181, 183–184, 186–187, 189, 220, 245–246, 248, 250, 255–258, 260–262  
 Articulator 182, 189, 221, 225  
 Articulatory musculature 245–246, 261  
 Assimilation 181  
 Autosegmental-Metrical Theory 197  
 Autosegmental-Metrical model 197  
 Auxiliaries 11, 139–141, 143, 149–155, 161–162, 164

## B

Backing 11, 45–46, 53, 59–60, 62–65, 70, 72, 77, 246, 248, 250, 256, 258–260, 262  
 Benefactive 11, 139, 143, 145–147, 150–155, 159, 161  
 Benefactive auxiliaries 11, 139, 155  
 Benefactive system 150–151, 161  
 Beneficial 29, 140, 142, 144, 147, 152, 174, 181–182  
 Bisyllabic 128, 272–273  
 Bolshevik 268  
 Brain damage 198

## C

CA *see* Consonant Approximation

Causative 139, 141, 145, 151, 155–156  
 Central 53, 59–60, 63, 98–99, 104, 110–115, 118, 121–122, 131–132, 158, 181–182, 197, 253, 257–258, 262  
 Central participant focus 98  
 Changes in syllable structure 255  
 Clinical 169, 175–176, 180–183, 189, 198, 223, 233–234, 246, 260  
 Clinical phonology 169, 175–176, 183, 189, 223, 260  
 Coarticulation 174–175, 181, 221  
 Cognitive Grammar 98–99, 106, 128, 132, 134  
 Columbia School of Linguistics 2, 4–5, 10, 19–21, 28, 33, 41, 50, 97–99, 104–106, 111, 113, 133–134, 169, 178, 222, 269  
 Columbia School analysis 97, 134  
 CS 2, 4, 8, 11, 50, 90, 181–182, 186, 222  
 Combinatory phonology 169  
 Common Semantic Denominators 45–46  
 CSD 45–46, 50, 56–58, 64–77  
 Communicative factor 233, 238–239  
 Communicative strategies 21, 91  
 Communicative strategy 21, 99, 232, 257  
 Comparative 36, 269  
 Complementary distribution 58, 171  
 Conditional 18, 20  
 Consonant Consonant approximation (CA) 248–249, 252, 256, 261–262

- Consonant cluster  
     reduction 246,  
     249–250, 256  
 Consonant deletion 184,  
     186, 246, 249–250, 256, 262  
 Consonant epenthesis 248,  
     250, 255–256, 261–262  
 Consonant harmony 246  
 Constriction 171–175, 181,  
     183–185, 225, 235–236,  
     279–280  
 Contextual feature 7  
 Contour distribution 201, 205  
 Co-occurrences of Cs  
     181–182, 186  
 Count numbers 55  
 CS *see* Columbia School of  
     Linguistics  
 CSD *see* Common Semantic  
     Denominators  
 CV syllable 169, 180, 185, 186  
 Cyclicity 181, 186
- D**
- Declarative 187–188, 197–202,  
     208–209, 212–215  
 Decoder 21–22, 24, 26,  
     208, 211  
 Degree of precision of  
     reference 114  
 Deixis 8, 11, 97–99, 103–107,  
     111–112, 114, 127–128,  
     131–133  
 Deictic system 103  
 Demonstratives 8, 11, 97–100,  
     103–104, 106, 108–111,  
     113–121, 126, 128–134  
 Derivational morphology *see*  
     Morphology  
 Developmental 169, 175–176,  
     180–181, 183, 186, 189–190,  
     197–198, 202, 223, 260  
     Developmental language  
     disorders 197–198,  
     200–201, 203–205,  
     207–209  
     Developmental speech  
     disorders 197  
 Devoicing 184, 223–224, 246,  
     249–250  
     Devoicing of final  
     consonants 184  
 Diachronic change 83–85
- Differentiation 104–106, 114,  
     129, 132–133  
 Diphthong 53, 59–60, 63, 97,  
     172–173, 200  
 Discourse 3, 5, 19, 28, 72,  
     98, 103, 113–115, 117–118,  
     120–121, 134, 140, 143,  
     161–162, 210, 267–268  
 Disfavoring 173–175, 183,  
     274–275, 278  
 Distinction between meaning  
     and message 105  
 Distinctive 5, 36, 45, 48,  
     54–59, 65–66, 69–70,  
     72–73, 76–78, 145–146,  
     170, 173–174, 189, 235–236,  
     270–271, 274–275  
     Distinctive semantic  
     feature 45, 48, 54, 57,  
     65–66, 69–70, 72–73,  
     76–78  
 DLD *see* Developmental  
     language disorders  
 Dual number 55  
 Dutch 11, 97, 99, 101, 106–107,  
     123, 130–132, 175  
     Dutch article, stressed 130  
     Dutch demonstratives 8,  
     97–98, 103, 110, 115, 128,  
     131–132  
     Dutch passive 134  
     Dutch spelling 97  
     Middle Dutch  
     demonstrative 132  
 Dysarthria 197–198, 209, 245,  
     247–249, 256–257, 259, 262  
 Dysphonia 197–198, 223
- E**
- Egocentric bias 110–111  
 Emphatic 100, 106–107, 125,  
     128, 130, 133, 153, 171, 173,  
     202, 204–205, 210  
 Entity Number System 55  
 Etymology 50, 267  
 Evolutionary phonology 11,  
     169, 180–183, 185–187, 189  
     Evolutionary  
     explanation 182–183,  
     186–187  
     Evolutionary hypothesis 189  
 Exclamatory sentence  
     207–208, 215
- Explosive mobile  
     phonemes 281
- F**
- Falling contour 199, 207  
 Favoring of CV syllables 169,  
     180, 186  
 Favoring 40, 109, 111, 119, 169,  
     173–175, 179–184, 186–188,  
     210, 231, 236–237, 262, 273,  
     278, 281, 283–284; *see also*  
     disfavoring  
 Final consonant deletion 184,  
     186  
 First language acquisition 182,  
     245, 259  
 Flap 171  
 Focus 6–9, 11–12, 84, 91, 93,  
     97–99, 105, 111, 113, 129,  
     133–134, 139–140, 143, 145,  
     151, 154–155, 157, 162,  
     206, 269  
     Focus system 139  
 Folk tale 268  
 Fortis 172  
 Fricative 172, 174–175, 183,  
     234–235, 237, 246, 249,  
     253, 262  
 Fronting 11, 45–46, 52–53, 56,  
     59, 65, 77, 246, 249–250,  
     258–260  
 Functional semiotic definition  
     of language 169
- G**
- Generative Grammar 1,  
     3–4, 132  
*Gerundio* 11, 83, 86–89, 91–95  
 Glide 171, 246, 261  
 Glottalization 248–250, 253,  
     256, 262  
 Grammatical 4  
     Grammatical account  
     139–141  
     Grammatical analysis 222  
     Grammatical category 49  
     Grammatical  
     convention 213  
     Grammatical difference 51  
     Grammatical distinction 65  
     Grammatical factor 145  
     Grammatical feature 65  
     Grammatical form 49, 187

- Grammatical function 85  
 Grammatical hint 113  
 Grammatical meaning 5, 113  
 Grammatical model 140, 162, 169, 176, 178, 180  
 Grammatical problem 10  
 Grammatical rule 213  
 Grammatical sentence 86  
 Grammatical subject 134  
 Grammatical system 19, 90, 133, 139, 141  
 Grammatical theory 4  
 Grammatical unit 106  
 Grammaticality 4, 151  
 Grammaticality judgements 3  
 Grammaticalized 85  
 Gratitude terms 155  
 Great Vowel Shift 76
- H**  
 Hearing impaired 12, 197, 219–222, 224–225, 227, 237–239  
 Hearing pathology 12  
 Hebrew 55, 90, 169, 175–176, 178–179, 183–184, 220, 223–225, 230, 233–234, 236–237, 274, 281  
 High deixis 98, 104, 131, 133  
 Homeric Greek 113  
 Homonymy 106  
 Human factor 66, 169–171, 173, 181, 185, 189, 210–211, 214, 223, 226, 228, 231, 233–239, 260–261
- I**  
 ICC *see* Incomplete consonant closure  
 Iconic connection 176, 269, 271, 273, 276, 279, 281–282, 284  
 Iconicity 54, 97, 128, 131, 133, 222, 269  
 Imperative 20, 150  
*Imperfecto* 6–7, 9, 94  
 i-mutation 50, 52, 77  
 Incomplete consonant closure 248–249, 251, 256  
 ICC 250–251, 255–257, 259, 262  
*Indefinido* 6–7, 9, 91, 94
- Independent proof 7  
 Independent validation 2, 4, 10  
 Indicative 8, 10, 17–35, 37–38, 40–42  
 Infinitive 11, 83, 86–89, 91–92, 94–95  
 Inflectional 169, 179–180, 184–185, 272  
 Inflectional morphology *see* Morphology  
 Initial consonant clusters 174–175  
 Instrumental 98, 113  
 Inter-cyclical Organization 182  
 Internal Vowel Alternation 10, 45–46  
 IVA 10–11, 45–47, 49–60, 62–70, 72–73, 76–78  
 Intonation patterns 197, 214  
 Introspection 1, 4  
 Invariant meanings 11, 17, 28–29, 31, 37, 41, 45, 48, 50  
 IPA symbols 60  
 Italian pronouns 113  
 IVA *see* Internal Vowel Alternation
- J**  
 Juncture tone 213
- K**  
 Korpus Gesproken Afrikaans 111
- L**  
 Langue 170  
 Laxness 172  
 Lenis 172  
 Less adroit 172–173, 259  
 Lexicon 12, 54, 169, 176, 178, 182, 222, 267, 269–286, 288  
 Linguistic change 11, 83–85, 94, 130  
 Linguistic meaning as hint-like 98  
 Liquid 171, 177, 261, 268  
 Literature 12, 50, 65, 89–90, 100, 103, 114, 116, 202, 219, 227, 248–249, 256, 262, 267–268  
 Low attention 113  
 Low deixis 98–99, 104, 131, 133
- M**  
 Male 113, 129, 201–202, 224, 260  
 Mandibular Oscillation 181, 186  
 Mass noun 56  
 Mass numbers 55  
 Maximum communication 50, 170–172, 180–183, 187, 190, 208, 210–215, 222, 239, 259–260, 277  
 McGurk effect 220  
 Melodic group 200, 203, 209–210, 212  
 Metathesis 246  
 Middle Dutch demonstrative *see* Dutch  
 Mild dysarthria 245, 247  
 MIL 247, 259  
 Minimal effort 50, 170–172, 180, 182–183, 187, 190, 208, 210–214, 223, 259–260  
 Minimalist Framework 132  
 Mini-max 50, 176, 180, 215, 223, 258  
 Mobile 172, 174–175, 183, 187, 235–237, 281  
 Moderate dysarthria 245, 247, 259–261  
 MOD 247, 259–261  
 Monophthong 172  
 Monosyllabic 50, 58, 65, 272–274, 281  
 Mood 8, 10, 17–19, 22, 24–26, 30–31, 35, 37, 145  
 Morphology 48, 51, 179  
 Derivational morphology 179  
 Inflectional morphology 169, 179, 184–185, 272  
 Synthetic morphology 51  
 Zero morphology 48  
 Motor development 221  
 Mouthing 220, 227
- N**  
 Nasal 171, 187–189, 222, 234, 257, 270, 274–276, 278–279  
 Natural 267, 269–285, 288  
 Natural language 12, 69  
 Natural lexicon 12



- Natural Phonology 175–176, 183, 246
- Natural egocentricity of the speaker 110
- ND *see* Neurological disorders
- Neurological disorders 181, 197–198, 223
- ND 197–198, 200–201, 203–205, 207, 209
- Non-distinctive 170
- Non-emphatic 171
- Non-explosive mobile phonemes
- Non-random distribution 28, 34, 40, 172, 174–175, 179, 271, 273, 278
- Non-retroflexed 171
- Non-visible phonemes 280
- Non-Vocalization 219–220, 229, 231–232, 235, 237–238
- Noun plurals 45–46, 52–58
- Number 86, 98, 113, 179
- Count numbers 55
- Dual number 55
- Entity Number System 55
- Mass numbers 55
- Number system 55, 105
- Verbal number 107
- O**
- Objective 1, 4–10, 90, 111–112, 122
- Objective procedures 5
- Objective testing 8–9
- Objectivity 5–7
- Occurrence 5–6, 10–11, 19–25, 30, 35, 37–38, 41, 88, 105, 140, 149, 152, 155–156, 161, 186, 188, 260
- Occurrence system 19–22, 25, 41
- OED 67, 73
- Omission 223, 227, 229–233, 235–239, 249
- Opposition 4, 6, 8, 17, 19–22, 30, 35, 37, 41, 53, 59, 63, 65, 68, 73, 85, 91–92, 98, 108, 111–112, 131, 139, 141, 145, 151, 172, 234, 270, 275
- Opposition of inclusion 111–112, 131
- Opposition of substance 98, 112
- Oral 171–172, 183, 185, 188–189, 220, 224, 227, 234, 256–258, 270, 274, 278
- Other than speaker and hearer 113
- Otorhinolaryngological disorder 198
- Overt agent 152–153
- Oxford English Dictionary 67, 73
- P**
- Paradigmatic excellence 105, 107, 112, 127, 130
- Paradigmatic prominence 102
- Parole 170
- Particles 31, 152–153
- Passive 90, 134, 139, 145–149, 151, 171–172, 182–183
- Passive receptors 171–172, 182–183
- Passive voice 90, 145, 147, 149, 151
- Past tense verb forms 45–46
- Pathological speech 197, 209, 212–213, 223
- Perception 54–55, 65, 69, 72, 78, 170, 180, 211, 220–222, 227, 238, 259, 277, 283
- Peripheral 104, 110, 114, 118, 121–122, 131–132, 197, 214
- Phantasmagoric 267
- PHB *see* Phonology as Human Behavior
- Phoneme 3, 10, 170, 174–176, 180, 182, 219–221, 225, 251–252, 256, 258–262, 278
- Phoneme acquisition 221
- Phonemes of aperture 171–173, 180, 184–185
- Phonemes of constriction 171–173, 181, 183–185, 279–280
- Phonological error process 219, 238–239
- Phonology as Human Behavior 5, 10–11, 50, 167, 169–170, 189–190, 197, 209, 219, 222, 245–246, 258, 269–271, 276
- PHB 10–12, 50, 169–171, 173, 175–176, 178–186, 189, 197, 208–215, 219, 222–224, 234, 236, 246, 256–258, 260, 262, 271
- Phonotactics 169, 174, 234
- Phonotactic skewing 173
- Phrase accent 210, 212
- Physiology of the vocal tract 170, 181
- Pitch 12, 129, 188, 199–210, 212–213, 215, 222
- Place of articulation 171, 221
- Plosive 187, 260
- Pointing out 60, 102, 110, 125
- Polaric notions 270
- Polysemy 106
- Polysyllabic 58, 272–273, 277, 284
- Post traumatic 245, 262
- Posterodorsum 171–172, 181, 183, 227, 253, 259, 262, 280
- Pragmatics 110–111
- Pragmatic factors 110, 145
- Pragmatic inferences 104
- Pragmatic scales 114
- Preference for C-V syllables 185
- Prevocalic voicing 246, 249–250
- Processes of perception 221
- Prosody 12, 127–128, 131, 176, 197, 202, 206, 209–211, 213, 223, 245
- Prosodic patterns 198–199, 201, 204, 209, 216
- Proximity 103, 108, 110–111, 122, 258
- Q**
- Qualitative data 11, 84, 122
- Quantitative data 3, 12, 97, 99, 113, 117, 152
- Quantitative testing 5, 10
- R**
- Receptor 221
- Reduplication 182, 246, 249–250
- Relative clause 143, 152–154, 158
- Representational 98, 113
- Retroflexed 171

- Rhythm 146, 209–211, 213–214  
 Rising-falling contour 199  
 Root 33, 51, 73, 174, 177–178, 183, 281, 284
- S**  
 Semantic domain 29, 58, 270  
 Semantic Integrality 29, 36, 45, 54–58, 65, 69, 72, 78, 269  
 SI 54–58, 65, 69, 77–78  
 Semantic opposition 17, 41, 108, 139, 141, 151  
 Semantic primitive term 134  
 SI *see* Semantic Integrality  
 Sign system 11, 56, 65, 68–69, 72, 77, 169–170  
 Sign to text 28–30, 34, 41  
 Signals 6, 28, 45, 48, 103, 106, 110–111, 113, 132, 178, 222, 269  
 Sign-based framework 48, 106–107  
*Signifiant* 19, 48, 56–58, 65, 68, 70, 72, 77, 269  
*Signifié* 19, 45, 47–48, 56–58, 64–65, 68, 70, 72, 77, 179, 269  
 Sign-oriented 2, 5, 17–19, 28, 41, 45–47, 49–50, 55, 77–78, 90, 178, 267  
 Sign-oriented perspective 47  
 Silent articulation 220, 227  
 Simple emphasis 101–102, 112  
 Skewing 5, 10, 17, 33–35, 93–94, 121, 173, 184, 189, 236–237, 274  
 Socialist Realism 268  
 Soviet Russia 268  
 Speech disorders 12, 197, 199–200, 209, 245  
 Speech errors 176  
 Speech pathology 198  
 Speech production 211, 221–222, 226, 278  
 Spirantization 246, 248–251, 253–257, 259, 261–262  
 Stable 172, 174–175, 183, 187, 235–237, 239, 281
- Stop 172, 174–175, 183, 185, 187, 188, 234–235, 236–238, 246, 248–251, 256–259, 261–262, 275, 278  
 Stressed syllable deletion 246, 249–250  
 Stressed temporal adverbs 131  
 Stressed vowel deletion 246, 249–250  
 Stricture 171, 180, 185, 246, 258–260  
 Stuttering 197–198, 200, 209, 223  
 Subjunctive 8, 10, 17–35, 37–42  
 Substitution 223, 226–229, 231–232, 234, 237–239, 253  
 Superlative 26, 36, 269  
 Supernatural 12, 267–284, 286, 288  
 Suppletion system 55  
 Syllable addition 246  
 Synchronic variation 83–85  
 Syncretism system 55  
 Synthetic morphology *see* Morphology  
 Syntactic variation 83  
 System of differentiation 104  
 System of Place 113
- T**  
 TBI *see* Traumatic Brain Injury  
 TED hypothesis *see* Terminal Energy Decrease  
 Tenseness 172  
 Terminal Energy Decrease 187  
 TED hypothesis 188–189  
 Text to sign 28, 35–37, 40–41  
 Textual analysis 10, 17–18, 28, 41  
 ToBI 197, 206, 210  
 ToBI system 197, 206  
 Traditional grammar 106  
 Transitivity 89  
 Traumatic Brain Injury 245  
 TBI 245–250, 252–262  
 Trill 283  
 Truth-value 18
- U**  
 Umlaut 45–46, 50, 53, 77  
 Ungrammatical 85, 95, 107, 130
- Ungrammaticality 151  
 Universal part-of-speech categories 107  
 Unmarked 21, 29, 36, 48, 65, 69, 73, 78, 101, 110–112, 131–132, 173, 179, 181, 185, 197, 199, 202, 204–209, 215, 269–276, 278–281, 283–284  
 Unstressed modal particles 131  
 Unstressed syllable deletion 246, 249–250  
 Unstressed vowel deletion 246, 249–250  
 Uvula 172, 183, 188–189, 234, 270, 278
- V**  
 Validation 2, 4–5, 10, 33  
 Variability 18, 202  
 Variation 51, 60, 63, 70, 83–86, 92–94, 199, 202–203, 209, 212, 215, 225  
 Vendler classification 9  
 Verb classes 89–90  
 Verb-conjugation 178  
 Verbal number 107  
 Visible phonemes 280–281, 284  
 Voiced 171, 175, 184–185, 188, 199, 233–235, 239, 251, 257, 270, 274–279  
 Voiceless 171, 175, 184–188, 233–235, 251, 253, 257, 262, 270, 274–277, 279  
 Vowel centralization 248–250, 253, 256–259, 262  
 Vowel epenthesis 246, 250  
 Vowel gradation 46, 63, 77  
 Vowel triangle 172, 183
- W**  
 Wh-question 197, 199, 202, 205, 209  
 Word initial position 276, 280
- Z**  
 Zero agent 152–153, 164–165  
 Zero morphology *see* Morphology  
 Z-value 33–35, 40–42

