

**MINDING THE GAPS:
INFLECTIONAL DEFECTIVENESS IN A PARADIGMATIC THEORY**

DISSERTATION

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ABSTRACT

A central question within morphological theory is whether an adequate description of inflection necessitates connections between and among inflectionally related forms, i.e. paradigmatic structure. Recent research on form-meaning mismatches at the morphological and morphosyntactic levels (e.g., periphrasis, syncretism) argues that an adequate theory of inflection must be paradigmatic at its core. This work has often focused on how the lexeme (syntactic) paradigm and the stem (morphological) paradigm are related (Stump 2001a), while having less to say about the internal structure of each level. In this dissertation I argue that paradigmatic gaps support some of the same conclusions as other form-meaning mismatches (e.g., the need for the Separation Hypothesis), but more importantly, they also offer insight into the internal structure of the stem paradigm.

I focus on two questions that paradigmatic gaps raise for morphological theory in general, and for Word and Paradigm approaches in particular:

(1) Are paradigmatic gaps paradigmatically governed? Stump and Finkel (2006) argue that inflectional structure consists of implicational relationships whereby one or more paradigm cells serve as principal parts, from which other members of the paradigm can be predicted. Based on production/ratings experiments and distributional statistics from gaps in the genitive plural of Modern Greek nouns and the first person singular of Russian verbs, I argue for a corollary hypothesis – that paradigmatic gaps can arise in paradigm cells whose form cannot be predicted from nor are predictive of other members

of the paradigm (i.e., cells for which there is no principal part). The distribution of these gaps can thus be adequately explained only with reference to the inflectional (stem) paradigm. This is largely consistent with the conclusions of Albright (2003) for Spanish.

(2) Is there such a thing as lexically specified defectiveness? Or, stated differently, are paradigmatic cells ever stipulated as empty? Early studies generally assumed that gaps are idiosyncratic and therefore require lexical specification (Halle 1973), but more recent approaches have sought to explain at least some gaps are byproducts of the generative inflectional process, and therefore not directly marked in the lexicon (Albright 2003, Baronian 2005, Hudson 2000). I argue that historical causation is not to be confused with synchronic structure; the distributional patterns of paradigmatic gaps in Greek and Russian are consistent with the gaps-as-epiphenomena approach, but these appear to be historical remnants. Experimental data on speakers' reactions to defective vs. non-defective morphological forms in Greek shows that the gaps have become disassociated from their original causative factors. This indicates that gaps are like any other morphological pattern in being able to undergo lexicalization.

I also briefly consider the issues that lexeme-level defectiveness raises for learnability, and suggest that lexicalized defectiveness is not the learning problem it is often considered to be (e.g., McCarthy and Wolf 2005), if we allow for a concept of lexeme paradigm predictability based on usage statistics.

Ultimately, paradigmatic gaps in Greek and Russian demonstrate that paradigmatic predictability is a significant force in formal morphological systems at both the lexeme level and the form level. Moreover, in many respects paradigmatic gaps are surprisingly similar to well-formed morphological structures, for example in being

governed by paradigmatic structure and subject to covert reanalysis. This indicates that, contrary to traditional assumptions, (many examples of) paradigmatic gaps are neither idiosyncratic nor marginal to the functioning of the inflectional system. They thus deserve greater attention within morphological theory.

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GLOSSARY

Since the distinction between inflectional form and inflectional meaning is crucial to this dissertation, but the attached terminology is anything but standardized across subfields of linguistics, I find it necessary to begin with some definitions.

Word and Paradigm (WP) models of inflection assume a formal distinction between inflectional forms and inflectional properties (often called the Separation Hypothesis). In some areas of linguistics it is common to refer to the former as *lexemes* and the latter as *lemmas*. However, this is not the terminology typically used within WP models. Moreover, a cursory search of the linguistics literature reveals that the terms *lexeme* and *lemma* have no consistent definition or usage across the entire field of linguistics. The following are among the attested definitions.

In psycholinguistics, the term *lemma* is used for either (a) the morphosyntactic properties expressed by a given word form, but not the word form itself or the lexical meaning, (b) all possible morphosyntactic property sets that can be combined with a given lexical meaning, but not the lexical meaning itself or any word forms (i.e., lemma = an inflectional paradigm if we define it as the combinatory possibilities of inflectional properties in the language, (e.g. Spencer 2004)), or (c) the set of a lexical meaning and all possible morphosyntactic property sets that combine with that lexical meaning, but not any word forms. This last definition is probably the most common. The term *lexeme* is used to refer to the phonological instantiation of any of these definitions.

In corpus linguistics, the term *lemma* is often used to refer to the set of all inflected forms of a lexical item. The term *lexeme* is synonymous with lexical meaning (as opposed to inflectional meaning).

In lexicology, the term *lexeme* is used to refer to all inflected forms of a lexical item, thus the lexeme for the meaning of GO is the set *go, going, goes, went*, etc. The term *lemma* is used to refer to the citation form of a lexical item (e.g. *go*), also known as headwords, and thus lemmas are subsets of lexemes.

Finally, in WP morphology, the term *lexeme* is either (a) synonymous with lexical meaning – “the paradigm of a lexeme L is the inventory of syntactic atoms which may instantiate L in phrase structure” (Stump 2001a:148), or (b) the set of possible combinations of lexical meaning and inflectional properties (i.e., the entire paradigm). *Lexeme* is not used in reference to phonological form – *word form* fills this role. The term *lemma* is not used at all.

Each area of linguistics thus has its own traditions and there are discrepancies, or even outright contradictions, in usage. This dissertation is framed within a WP model, but in some respects overlaps with psycholinguistic concepts and methodology. This means that the most relevant contradiction is that a *lemma* in any of the psycholinguistic senses basically corresponds to a *lexeme* in WP morphology. While I find the psycholinguistic distinction to be the more useful, I have ultimately chosen a usage more closely in line with that used in other WP work. I thus use the following terms:

- lexeme: A lexical meaning, apart from the form which instantiates it or the morphosyntactic properties which can combine with it.

- lexeme paradigm cell: The combination of a lexeme and a set of morphosyntactic properties that can combine with that lexeme into a well-formed syntactic atom.
- lexeme paradigm: The set of all lexeme paradigm cells which have a common lexeme.
- stem: A form, belonging to an inflection class, to which inflectional processes apply in order to generate an inflected word form, apart from the lexical meaning that it instantiates.
- stem paradigm cell: The combination of a stem and a set of morphosyntactic properties that can combine with that stem into a well-formed morphological atom.
- stem paradigm: The set of stem paradigm cells which have a common stem.
- word-form: The phonological instantiation of a stem paradigm cell that is linked to a lexeme paradigm cell.
- word paradigm: The phonological instantiation of the set of stem paradigm cells that are linked to a single lexeme paradigm.
- lemma: Used only in the phrase lemma frequency to refer to the collected token count, in some sample, of all inflected forms belonging to the same lexeme.

While this may seem like more distinctions than is necessary for the lemma/lexeme distinction, each term represents a separate theoretical concept within the following work.

CHAPTER 1

WHAT IS (AND IS NOT) A PARADIGMATIC GAP?

This dissertation explores paradigmatic gaps. A well-known example of the phenomenon from Russian is given in Table 1.

спросить 'to ask'	SINGULAR	PLURAL	победить 'to be victorious'	SINGULAR	PLURAL
1 ST PERSON	спрошу / sprošu	спросим / sprosim	1 ST PERSON	*	победим / pobedim
2 ND PERSON	спросишь / sprosiš'	спросите / sprosite	2 ND PERSON	победишь / pobediš'	победите / pobedite
3 RD PERSON	спросит / sprosit	спросят / sprosjat	3 RD PERSON	победит / pobedit	победят / pobedjat

Table 1: An example of a paradigmatic gap in the Russian non-past verbal paradigm

In the non-past tense, Russian verbs have six paradigmatic cells (3 persons * 2 numbers), as shown. The vast majority of verbs are like *sprosit* 'to ask' in that there is an inflected form to fill each of the six cells. (These need not be unique word-forms, although they happen to be in Russian.) However, for at least a few dozen verbs, and perhaps as many as 100 (Halle 1973), no first person singular is used. POBEDIT' 'to be victorious' is such a verb; it has a paradigmatic gap in the first person singular non-past (**pobežu* 'I will be victorious').

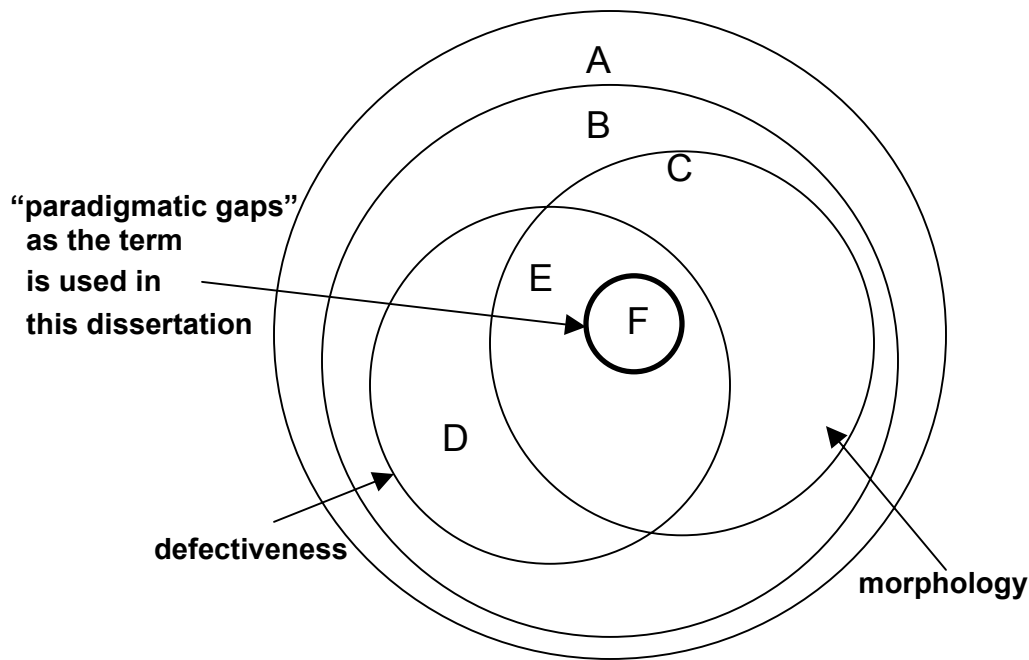
While this might seem to be a clearly defined phenomenon, the term *paradigmatic gap* has actually been used to describe virtually any situation in which an observed linguistic structure is in some sense unexpected or missing. Since I am concerned with only the most narrow subset of those phenomena which have been described as paradigmatic gaps – examples of defective inflection – I begin with an overview and formal definition of those phenomena that are, and are not, the present topic of study.

1.1. The term *paradigmatic gap*, broadly defined

The various uses of the term *paradigmatic gap* (and the frequent shorthand form *gap*) almost form hyponymic/hypernymic relationships to each other, based on the number of definitional criteria employed. This categorization is represented in Table 2 and Figure 1.

	A	B	C	D	E	F
unexpected form/structure?	√	√	√	√	√	√
language internal expectation?		√	√	√	√	√
defectiveness?				√	√	√
reflected in morphological system?			√		√	√
reflected in inflectional system?						√

Table 2: A criterial representation of the various uses of the term “paradigmatic gap”



Key

- A:** A “missing” word or grammatical structure, from any (including cross-linguistic) perspective.
- B:** An unexpected but grammatical structure, based on expectations formed from the internal structure of the language.
- C:** An unexpected but grammatical word form; a situation in which the morphological structure of a language leads to an expectation of an overt exponent of a morphological category, but a “null morpheme” (i.e. no unique, segmentable form) expresses the category instead.
- D:** Syntactic or semantically driven defectiveness, often resulting from a mismatch between the grammatical properties required by the syntax, and those expressed by the morphology.
- E:** Derivational defectiveness – for any word X, the non-existence of any word Y which stands in a given derivational relationship to X, despite the language normally having pairs of words representing the same derivational relationship.
- F:** Inflectional defectiveness – for a given lexeme, the non-use of any synthetic or systematic periphrastic form expressing a given set of inflectional properties, despite that set normally being expressed on lexemes of the relevant type.

Figure 1: A Venn diagram representation of the various uses of the term “paradigmatic gap”

At the most broad level, the term *paradigmatic gap* has been used to refer to any phenomenon in which a grammatical structure or lexical item is expected but not attested.

For example, when one language has a word that has no direct parallel in another language, this is sometimes called a *paradigmatic gap* in the second language (set A).

Also, the term *paradigmatic gap* is often applied to situations in which some grammatical

structure is expected based on language-internal grounds but a different, yet fully grammatical, structure appears instead. For example, Phillips demonstrates that in Old Spanish, perfect verbs do not invert under negation and calls this a *paradigmatic gap* (Phillips 1996: footnote 158) because the syntactic structure of Old Spanish leads to an expectation that inversion should occur (set B). And in an example at the morphological level (set C), some prefixes in Yimas (e.g., the negation marker) block the realization of others (e.g., nominative markers).¹ The data gets quite complicated, but (1) gives a simple demonstration, in which the second person singular nominative marker *ma* does not appear under negation.

(1) Nominative agreement affixes in Yimas (Wunderlich 2001:349)

- a. *ma-ŋa-tpul*
2SG.NOM-1SG.ACC-hit
'You hit me.'
- b. *ta-ŋa-tpul*
NEG-1SG.ACC-hit
'You didn't hit me.'

Wunderlich (2001) describes examples like (1b) as having *paradigmatic gaps*, by which he means the lack of an overt, segmentable morpheme expressing the 2nd person singular.²

None of these phenomena represent the present topic of study, nor are they examples of paradigmatic gaps as the term will be used in this dissertation. In Yimas, the

¹ According to Ethnologue (www.ethnologue.com), Yimas is spoken in Papua New Guinea, and belongs to the Sepik-Ramu > Nor-Pondo > Pondo group.

² Examples of this type have been discussed in the literature as competition for inflectional slots, rather than as defectiveness (Anderson 1992, Stump 2001b).

word-form in (1b) might be surprising in not containing the morph *ma*, but it is nonetheless fully grammatical and expresses the second person singular subject. This makes it fundamentally different from actual defectiveness. By contrast, in Russian speakers generally deem all possible word-forms expressing the first person singular of POBEDIT' to be unacceptable (see CHAPTER 6). Verbs like POBEDIT' represent defective paradigms; Yimas and Old Spanish do not.

Somewhat more tricky to distinguish from true paradigmatic gaps are examples of non-grammaticality caused by syntactic conflicts (set D), as in the following example.

At least five nouns in Russian require the preposition *na* 'on' for their locative use (stationary 'at' with the Prepositional case, '(going) into' with the Accusative), and *s* with the Genitive for their ablative use ('from'); these are *pošta* 'post office', *fabrika* 'factory', *zavod* 'industrial plant', *stancia* 'station', *vokzal* '(large) railway station'.... On the other hand, Russian has verbs that govern the preposition *v* + Accusative, such as *vojtí* 'enter' and verbs that govern the preposition *iz* such as *vyjti* 'go out, leave'. When the speaker wants to use these verbs with one of the five nouns above, the conflict between the agreement rules (the noun governs *na* or *s*, while the verb requires *v* or *iz*) results in the ungrammatical utterances [and repair strategies in (2)] (Hetzron 1975:860).

(2) Morphosyntactic conflicts resulting in defectiveness in Russian³

- a. *Ja vošel v / na počtu.
I went-in in on postoffice-ACC.SG
'I entered the post office.'
- b. Ja vošel v zdanije počty.
I went-in in building-ACC.SG postoffice-GEN.SG
'I entered the post office building.'
- c. *Ja vyšel iz / s počty.
I left from from postoffice-GEN.SG
'I left the post office.'

³ As Daniel Collins (p.c.) points out, several examples like (2a) and (2c) are available on the internet. It is therefore unclear to what extent speakers really treat them as ungrammatical.

- d. Ja vyšel iz zdanija počty.
 I left from building-GEN.SG postoffice-GEN.SG
 'I left the post office.'

Hetzron refers to this example as a “gap on the surface” (860); it is unclear whether he intends to group the examples in (2) with examples of true morphological defectiveness. However, Kiparsky (2001) undoubtedly groups together similar examples with morphological defectiveness. This is probably because they have similar surface effects – a sentence which is otherwise expected to be fully grammatical is unacceptable because of the morphological or morphosyntactic characteristics of particular word(s).

Note, however, that at an underlying level, examples like (2) and **pobežu* are quite different in type. In (2), the problem clearly lies in conflicting syntactic subcategorization requirements. *Vojti* requires one preposition, and *počta* requires another. The requirements of these two words cannot be simultaneously satisfied, so ungrammaticality is the result. But crucially, neither *vojti* nor *počta* is itself problematic – it is only in combination that ungrammaticality arises. By contrast, true paradigmatic gaps like **pobežu* represent problems inherent to words themselves. They represent a morphological or morphophonological problem, whereas cases of conflicting subcategorization requirements are an issue for the syntax and not the morphology. We thus want to keep these two issues separate, and I will not be discussing the problems presented by examples like (2).

1.2. The term *paradigmatic gap* as used in this dissertation

Using the most narrow set of criteria from Table 2, I formally define a *paradigmatic gap*, as the term is used in subsequent chapters of this dissertation, as follows.

- (3) **Definition of a paradigmatic gap:** For a lexeme belonging to lexical class C, a paradigmatic gap exists if *no* synthetic or morphological periphrastic form is used to express a set of inflectional properties I, when the language normally has a form expressing I for lexemes in class C. Any otherwise well-formed syntactic structure into which a hypothetical form is placed crashes.

There are several notable aspects of this definition.

First, I define paradigmatic gaps only with reference to a particular lexical class.

In many languages, nouns inflect for gender but verbs do not. Logically, for these languages we do not want to say that all verbs have paradigmatic gaps for the inflectional property of gender. Only properties which are normally expressed *for a particular lexical class* can “go missing”. A paradigm cannot have an empty cell if there is no language-internal basis for the relevant cell existing in the first place. The expectation against which the definition is set is thus constrained by the prevailing structures of the language.⁴

⁴ This aspect of the definition potentially runs into trouble in examples of inflectional loss. Knowing that inflectional loss does not affect all lexemes simultaneously, we can hypothesize that the spread of paradigmatic gaps is one possible path by which inflectional loss occurs. If so, a language in the process of inflectional loss necessarily reaches a tipping point at which gaps go from being unusual to being the statistically more likely pattern. Yet it is unclear at what point we should stop saying that the language has gaps, and instead has inflectional loss. Following Zwicky (1992), who argues that a language can specify more morphological features than syntactic ones, a possible analysis in such a situation would probably be that there is general loss of the syntactic category at some tipping point which is prior to the complete loss of morphological inflection. The loss of syntactic category causes remaining morphological remnants (non-defective forms) to be reanalyzed as an aberrant pattern along the lines of the English verb *be*, which specifies more persons than other English verbs.

Second, I define paradigmatic gaps as the non-use of a *morphologically generated form*. This is in response to periphrastic constructions. Periphrasis is the use of a multi-word phrase to express a set of morphosyntactic properties, despite that set normally having one or more synthetic realizations in the language. The classic case of the Latin perfect is given below.

IMPERFECTIVE	ACTIVE	PASSIVE	PERFECTIVE	ACTIVE	PASSIVE
PRESENT	laudat	laudatur	PRESENT	laudavit	laudatus/a/um est
PAST	laudabat	laudabatur	PAST	laudaverat	laudatus/a/um erat
FUTURE	laudabit	laudabitur	FUTURE	laudaverit	laudatus/a/um erit

Table 3: Periphrastic construction in Latin perfect (LAUDO ‘I praise’)

In Latin, the passive is expressed with a single word formation when it is imperfective, as is the perfective when it is active. The combination of perfective and passive, however, entails a periphrastic construction.

Traditional grammars have treated periphrastic expressions as part of the morphological system. On a descriptive level this is tenable. On a theoretical level it is more controversial (Ackerman and Stump 2004, Börjars et al. 1997, Embick 2000, Kiparsky 2005, Sadler and Spencer 2000, Spencer 1999, Vincent 1987). The literature suggests that periphrastic constructions demonstrate a range of behaviors from being nearly completely word-like to being nearly completely phrasal. The frequency with which historically free words become affixes also suggests fluidity in phrasal- vs. word-status. Assuming a componential theory of grammar, it is thus most likely that some

periphrastic constructions are morphologically generated and some are syntactically generated.⁵

I treat paradigms as having gaps wherever periphrases are not morphologically generated. Periphrastic constructions which are morphologically generated might be treated as akin to synthetic forms (there is not space here to expand on how such a treatment would work; see the above references). The burden thus falls on proving that a periphrastic construction is strongly word-like in behavior – frozen morphological form, cumulative exponence, non-separability, etc. – and thus likely generated by the morphology. Paradigmatic gaps exist wherever this burden cannot be met, assuming the other criteria of the definition are fulfilled.

Third, paradigmatic gaps represent the *non-use* of any morphologically generated inflected form. I purposefully use the word *non-use* here, rather than *non-existence* or *illicitness*, in order to provide a neutral definition with regard to the source of the defectiveness. We can hypothesize that speakers possess knowledge of inflectional structure at multiple levels of representation, including but not limited to: (a) knowledge of how to generate the appropriate form for a given stem paradigm cell,⁶ and (b) knowledge of how frequently a lexeme paradigm cell is used, separate from issues related to form generation. While previous research has focused on paradigmatic gaps as

⁵ We know that periphrasis is potentially different from a normal syntactic phrase precisely because the component morphosyntactic features are normally realized synthetically in the language, and because the periphrastic phrases are not fully decomposable semantically (Sadler and Spencer 2000). There are interesting parallels here with idioms and compounds. If we think of wordhood as being a scale from least decomposable to most decomposable, and employ the lexeme/stem distinction discussed previously, we can think of periphrasis, idioms and compounds as all being examples of mismatches between the hierarchies of decomposability – the forms are more decomposable than the semantics. This suggests that Latin periphrasis is structurally intermediate between a typical synthetic phrase and a typical syntactic phrase, and not canonically one or the other. Some recent accounts have chosen to draw the line so as to include the periphrastic phrases in morphology.

⁶ See the Glossary for usage of the terms *stem paradigm cell* and *lexeme paradigm cell*.

problems with generating an appropriate form (i.e., based on the first type of knowledge) (Albright 2003, Baronian 2005, Fanselow and Féry 2002, Rebrus and Törkenczy to appear 2007, Rice 2005, just to name a few recent accounts), I argue in the following chapters that defective inflection can stem from either type of knowledge. Therefore, in order to not bias the definition of a paradigmatic gap towards one type of explanation or the other, I define a gap as non-use.

Finally, I define paradigmatic gaps purely in terms of the *inflectional* system of a language.⁷ The coverage of the term *paradigmatic gap* thus rests upon the scope of the term *inflection*. Since there is not complete agreement in the literature about where the boundary between inflection and derivation should be drawn, or whether a categorical distinction should be made at all, it is worth being explicit regarding my working definition of inflection.

The following are among the criteria which have been commonly cited in the literature for distinguishing inflection from derivation. This list is not intended to be complete.

⁷ This follows the practice of many morphologists (Greville Corbett, p.c.), but not all. Raffelseifen (1996, 2004), for example, presents a unified analysis of both derivational and inflectional defectiveness within an Optimality Theory framework. Whether inflectional and derivational defectiveness represent the same empirical phenomenon is a thorny question. Some anecdotal evidence suggests that there might be a difference. For example, speakers seem more willing to accept utterances with filled derivational gaps than filled inflectional gaps, even if the derivational gaps are viewed as awkward (personal observation). In the end, however, it was partially a practical decision and partially a theory-internal decision to exclude derivational defectiveness from the present topic of study, but not an empirically-driven one.

(4) Some proposed characteristics distinguishing derivation from inflection

- a. Derivation adds lexical meaning and changes word-class membership as a result; inflection does not.
- b. Inflection only and always encodes a closed class of functions (e.g. case, number, gender, person...); derivation is everything else.
- c. Inflection encodes configurational (received) properties (e.g. case, number, person); derivation encodes inherent properties (e.g. gender, inflectional class).
- d. Derivation is more difficult to process than inflection due to conceptual complexity, semantic transparency, phonological transparency, pseudo-affixation, affixal homonymy, etc. (Schreuder and Baayen 1995:146).
- e. Inflection is fully productive; derivation is not.
- f. Derivation appears inside inflection.
- g. Derivation originates historically in compounds; inflection originates historically in other types of material, especially functional categories (Hall 1992).
- h. Inflection is only suffixal in English; derivation is both prefixal and suffixal.
- i. Inflection tends to be subject to speech errors whereby suffixes appear outside of the phonological word (e.g. *tell-us-ing* instead of *telling us*); derivation tends to not be subject to these kinds of errors (Stemberger and MacWhinney 1986).
- j. "...if an agreement rule causes item X to agree with item Y in property P, then P is an inflectional property for both X and Y" (Anderson 1982:588).

These criteria cannot be taken as a whole since some criteria contradict others, and counterexamples to many of these points are well known.⁸ Still, many researchers maintain that the evidence is sufficiently robust to posit a sharp theoretical distinction between inflection and derivation (e.g. Anderson 1982, 1992, Aronoff 1994, Baker 1990,

⁸ Three examples of contradictory criteria (many more exist): (a) *re-* as in *redo*, *rewrite*, *rework* is considered derivational and adds meaning in the intended sense, but does not change word-class membership. (b) In Slavic languages, diminutives may change the gender of the noun to which they attach, but in other languages this is not true (Anderson 1982:586). Gender thus seems to be sometimes derivational, sometimes inflectional, countering the claim that inflection only and always reflects a closed class of functions. Finally, (c) ablauting (e.g. in the past tense of *run*, *swim*, *drink*) is inflectional according to all criteria except the one that inflection should appear outside of derivation. These types of problems have led some researchers to argue that the traditional categories of "inflectional" and "derivational" represent opposite ends of a continuum, rather than a categorical distinction (e.g. Bochner 1993, Bybee 1985, Sadock 1991, Schreuder and Baayen 1995).

Booij 1996, Hoeksema 1985, Sells 2004, Steele 1995, Stump 2001b, Zwicky 1990). I follow this path. I assume a categorical distinction between inflection and derivation, and define the boundary between the two using Anderson's (1982) definition, given in (4j) above.

Anderson's definition of inflection is fundamentally different from the other criteria in (4) and is a formalization of his well-known claim that "inflectional morphology is what is relevant to the syntax" (1982:587).⁹ It overlaps significantly with some of the other criteria listed above but cannot be subsumed by them for two reasons. First, the definition is "strictly theory-internal" (587) since agreement is a theoretical concept. Second, it is also strictly language-internal. Inflection cannot be defined cross-linguistically since agreement patterns are not identical from one language to another. In assuming this definition of inflection, I argue that a paradigmatic gap is also necessarily a theory-internal and language-internal concept. This perspective motivates and is reflected by the definition in (3) above.

Returning to the example of POBEDIT' (Table 1 above), we can see that this lexeme's paradigm meets all of the definitional criteria for having a gap. PERSON and NUMBER are inflectional categories because Russian displays sentential agreement for both. The gap thus affects the inflectional system. Verbs in Russian normally inflect for both categories, so there is an expectation that all verbs should have a 1sg non-past

⁹ Anderson did not completely pioneer this concept of inflection; it was clearly nascent in Sapir's (1921) distinction between derivational concepts, concrete relational concepts, and pure relational concepts. Derivational concepts correspond to the Anderson's definition of derivation, while both concrete relational concepts and pure relational concepts correspond to inflection. These more or less correspond to inherent inflection (=concrete relational concepts) and contextual inflection (=pure relational concepts) (Booij 1996).

form.¹⁰ There is no systematic periphrastic construction which is plausibly morphologically generated and fills the 1sg cell of POBEDIT's non-past paradigm.¹¹ The 1sg of POBEDIT' is rarely used, indicating that the gap is not only a prescriptive, but also an empirical phenomenon. And finally, Russian speakers typically consider any sentence containing a first person singular form of POBEDIT' to be ill-formed. In short, there seems to be every expectation that a 1sg form should exist and be used, but this expectation is not met. This is the essence of inflectional defectiveness.

1.3. Paradigmatic gaps as statistical phenomena

While this definition is viable in principle, a question often arises in practice about what it means for there to be no use of a given combination of lexeme and inflectional property set.¹² Speakers are wont to innovate, variation is rampant, and with a sufficiently large corpus it is possible to find word-forms being used that “fill” many, if not all, defective paradigm cells. This raises the question of whether paradigmatic gaps are actually a problem for the grammar, or simply cases of infrequent usage.¹³

Paradigmatic gaps tend to trigger various peculiar reactions from speakers which signal that gaps represent some grammatical generalization. For example, speakers can often produce the word-form that would be expected to fill a defective paradigm cell, but

¹⁰ There is an exceptional class of impersonal verbs, which have only a 3sg form, but they are not relevant here.

¹¹ If speakers need to express the meaning of <POBEDIT', {1st SING NON-PAST}>, they will use a periphrastic construction to circumlocute the defective cell, e.g., *oderžu pobedu* ‘I will gain a victory’, but the point here is that this periphrastic pattern is not systematized from one defective lexeme to another or from one speaker to another, so there is not reason to think that it is grammaticalized.

¹² See the GLOSSARY for discussion of use of the terms *lexeme* and *lemma*.

¹³ This is not meant to suggest that usage is irrelevant to grammar. This is an ongoing debate regarding the degree to which grammar and usage (competence and performance) are distinct; Newmeyer (2003) and Bybee (2006) are two recent high-profile papers on the topic. Here I intend to express only the position that grammar cannot be *entirely* reduced to patterns of usage.

they tend to reject it regardless (Albright 2003, Hetzron 1975, Orgun and Sprouse 1999). This type of reaction does not apparently happen with infrequent but non-defective inflectional forms. In fact, new inflected forms of non-defective lexemes tend to be produced and heard without it even being consciously noticed that they are novel (Haspelmath 2002). While this example is anecdotal, it suggests that, at the very least, paradigmatic gaps reflect something about the grammar which cannot be reduced to low frequency of usage.

So what conclusions should be drawn when word-forms that fill supposedly defective paradigm cells are attested? I suggest that “non-use” should be interpreted in statistical, rather than absolute, terms. The following discussion uses the English example of FOREGO to outline an interpretation of paradigmatic gaps as *relative* non-use. It is meant only to give the flavor of the argument, but the line of argumentation is nothing more than basic statistical reasoning, and should be familiar to most readers. CHAPTER 6 implements the principle for Russian in a more rigorous manner.

The verb FOREGO (spelled alternatively *forego* or *forgo*) is commonly considered to have a paradigmatic gap in the past tense (e.g. Frampton 2001). Relevant to the existence of a gap, but probably not the end of the story, is the fact that there are two forms, *forewent* and *foregoed*, that directly compete. For many native speakers of English, neither form sounds natural. In April 2006 the web search engine Google produced 123 examples in which the same person wrote multiple past tense forms of the verb, including the examples in (5). Such examples suggest speaker uncertainty regarding the “correct” form.

(5) Speaker insecurity in using the past tense of *forego*

- a. I for-what? I want the past tense of “forgo”. I forwent? I forgone? I forleft? Anyway, I avoided reading the bio of Zelda Fitzgerald.
- b. I got it installed, but I foregoed (forewent?) the IIS install for now.
- c. What’s the 1st person past tense of “to forego?” As in, “I fore**** that opportunity last week.” Forgoed? Forwent? Or something else? I’m boggled by this verb.
- d. Because of the fussiness of the decals, I forgoed....forewent....err.... I didn’t put on any of the small stencil decals.

If the past tense of this verb is necessary, speakers often avoid the issue by finding a circumlocution (see (5a) and (5d)). Consistent circumlocution is indicative of a paradigmatic gap in the past tense of this verb (the other definitional criteria are met).

The question here is the consistency with which speakers circumlocute. Table 4 through Table 6 estimate the usage of forms of GO, UNDERGO, and FOREGO, based on two sources – attestation in the British National Corpus and hits returned by Google.

source	go	goes	went	goed	gone	going	TOTAL
British National Corpus	83,770	14,536	45,872	1	18,455	62,663	225,297
	37.2%	6.5%	20.4%	0%	8.2%	27.8%	100.1%
	43.7%		20.4%		36%		
Google	6.32 bill	657 mill	414 mill	1.86 mill	302 mill	1.1 bill	8.795 bill
	71.9%	7.5%	4.7%	0.02%	3.4%	12.5%	100.02%
	79.4%		4.7%		15.9%		

Table 4: Some frequency information about the English verb GO

source	undergo	undergoes	underwent	undergoed	undergone	undergoing	TOTAL
British National Corpus	613	123	550	0	570	582	2,438
	25.1%	5%	22.5%	0%	23.4%	23.9%	99.9%
	30.1%		22.5%		47.3%		
Google	55 mill	13.3 mill	20.7 mill	395	31.9 mill	50.9 mill	17.18 mill
	32%	7.7%	12%	0.0002%	18.6%	29.6%	99.9%
	39.7%		12%		48.2%		

Table 5: Some frequency information about the English verb UNDERGO

source	for(e)go	for(e)goes	for(e)went	for(e)goed	for(e)gone	for(e)going	TOTAL
British National Corpus	197	4	0	0	26	13	240
	82.1%	1.7%	0%	0%	10.8%	5.4%	100%
	83.8%		0%		16.2%		
Google	12.5 mill	690,000	147,500	950	4.71 mill	41.62 mill	59.668 mill
	21%	1.2%	0.2%	0.002%	7.9%	69.8%	100.1%
	22.2%		0.2%		77.7%		

Table 6: Some frequency information about the English verb FOREGO

In the British National Corpus, both GO and UNDERGO have past tense forms representing slightly more than 20% of total lexeme frequency. At the same time, the corpus does not contain a single example of *forgoed*, *foregoed*, *forwent*, or *forewent*. Considering that the British National Corpus (BNC) contains one hundred million words (90% text, 10% speech), this is a notable absence, and it provides apparent support for the conclusion that there is absolute non-use, and thus a gap, in the past tense of FOREGO.

However, difficulty arises when we consider a larger sample. Google produced 147,500 page hits for *forewent* and *forwent* combined, and 950 hits for *foregoed* and *forgoed*. Does this mean that FOREGO does not have a paradigmatic gap in the past tense? It would be counterintuitive to conclude based on a single example that the relevant

paradigm cell is not, in fact, defective. But at what point do we have a sufficient number of examples to draw this conclusion? Are 148,450 hits enough?

I argue that the absolute number of attested examples of a particular inflected form is irrelevant to the question of whether the paradigm cell in question is defective. It is the comparison of observed to expected frequency that is important. 148,450 page hits for *forego/forgo/forewent/forwent* is in absolute terms a large number of examples that fill the gap. But if we assume that the results of the Google searches are a reasonable reflection of patterns of usage (perhaps a questionable assumption but one that is sufficient for present purposes), the past tense constitutes only 0.2% of total uses of the lexeme FOREGO. Given that the semantics of the verb are fully compatible with past tense, and that the past tense is a frequently used inflectional form in English, this is a significantly lower number of attestations that we might expect. If we (very conservatively) estimate that English verbs are, on average, used 5% of the time in the past tense form, we would expect to find almost three million hits for the past tense of FOREGO (59.7 million attestations of the lexeme * 0.05 = expected frequency of past tense). In finding only 148,450, we can infer that speakers probably avoid using this form, and conclude that there is a gap.¹⁴ In this sense, a gap is a statistical phenomenon. The hallmark of a gap is (highly significant) deviation from expected frequency, not the absolute number of attested tokens.

¹⁴ This assumes that the difference between the expected and observed frequencies is at least, say, two standard deviations removed from the mean difference between expected and observed frequency for past tense forms in the language generally (normalized for number of tokens). This seems very likely to be the case, but I have not gathered frequency counts for a large sample of English verbs, as would be needed to demonstrate this.

A statistical interpretation also highlights a crucial difference between rarely used but non-defective lexemes and lexemes with paradigmatic gaps. In the latter, the word-form representing the defective cell is used much less frequently than expected, given the overall frequency of the lexeme and the relative frequency with which that cell in the paradigm is used across lexemes. Infrequent usage is a deviation from expectations. By contrast, in a non-defective lexeme that is overall of low frequency, each word-form is not expected to be used often. Infrequent usage is thus in line with expectations.¹⁵ This further supports the idea that the important metric for identifying defectiveness is the number of attestations in the context of expectations, rather than the number of attestations in isolation.

1.4. Summary

This dissertation is about paradigmatic gaps and their relationship to inflectional structure. CHAPTER 1 provided an introduction to the topic – a definition of the term *paradigmatic gap* as it is used in this work. A paradigmatic gap is the non-use of any form expressing a set of inflectional properties for a particular lexeme, despite the language normally having a synthetic or systematic periphrastic form expressing that same set for lexemes in the same class.

Skeptical readers may observe that it is almost always possible to find examples of word-forms that fill supposed gaps. For example, attestations of Russian *pobežu* ‘I will be victorious’ exist, even though the 1sg non-past of POBEDIT’ is widely considered to be defective. The same is true for *foregoed*, which is often considered a gap in

¹⁵ Note the implication here that paradigmatic gaps occur primarily among mid- to high-frequency lexemes. Paradigmatic gaps among infrequently used lexemes present a significant theoretical problem, especially for models of language learning, but there is not space here to delve into that issue.

English. This raises the question of whether there is ever such a thing as true defectiveness, or whether paradigmatic gaps just represent a fact about language use. I argue that paradigmatic gaps indicate a property of the grammar, distinct from simple non-use. The problem of “filled gaps” is easily avoided if usage is defined against expectations and interpreted in statistical terms – *foregoed* (*pobežu*, etc.) occurs far less frequently than would be expected, given the overall frequency of the lexeme and the mean relative frequency of the past tense across lexemes.

With this foundation, I now turn to the issues at hand. In CHAPTER 2 I outline the particular questions that are of importance for this work. CHAPTER 3 lays out my theoretical framework, including a review of paradigmatic structure as it is relevant to this work. CHAPTER 4 through CHAPTER 6 present the meat of the original data – explorations of how paradigmatic gaps in Modern Greek and Russian interact with and are shaped by paradigmatic structure, and the degree to which paradigmatic gaps are synchronically motivated by morphological structure. CHAPTER 7 contains brief closing remarks, including consideration of learning issues.

CHAPTER 2

WHY GAPS? IMPORTANT QUESTIONS

2.1. More than idiosyncratic exceptions

Paradigmatic gaps represent an obvious challenge to theories of inflectional morphology. On the one hand, inflectional morphology is highly productive, and speakers easily produce a complete set of inflected forms for a novel lexeme. On the other hand, paradigmatic gaps can be transmitted for several generations without the empty paradigm cell being filled. At first glance, the perpetuation of gaps thus seems to contradict the productive nature of inflectional morphology, and fly in the face of speakers' tendency to generalize.

While this contradiction has long been recognized, defectiveness has not until recently been a topic of much theoretical interest. This dissertation is the first monograph on the topic that I am aware of, and excluding work on pluralia and singularia tantum nouns, the vast majority of articles concerned with explaining paradigmatic gaps have appeared in the last few years (e.g., Albright 2003, Baerman and Corbett 2006, Baronian 2005, Fanselow and Féry 2002, Frampton 2001, Hansson 1999, Hudson 2000, Johansson 1999, McCarthy and Wolf 2005, Morin 1995, Orgun and Sprouse 1999, Pertsova 2005, Raffelsiefen 2004, Rebrus and Törkenczy 2006, Rice 2005, papers in Rice to appear 2007, Törkenczy 2002, Vincent 2005). Most earlier work either mentioned paradigmatic

gaps only in passing, or used paradigmatic gaps as data in connection with some other theoretical point, without concern for the theoretical status and causes of the gaps (e.g., Eliasson 1975, Fodor 1972, Halle 1973). As a result, a relatively small range of examples has been the topic of theoretical scrutiny.

Early mentions largely treated paradigmatic gaps as curious but isolated phenomena that are not particularly revealing of linguistic structure. For example, the English verb BEWARE has only one form, variously considered to be either a base form or the infinitive. Fodor (1972:531) notes that “The real generalization about *beware* is that it can occur wherever uninflected *be* followed by an adjective can occur, e.g. in imperatives, infinitival complements, following modals.” BEWARE has paradigmatic gaps elsewhere.

(6) Sample constructions allowing BEWARE

- a. Beware of the dog.
- b. Do beware of the dog.
- c. I will beware of the dog.
- d. I will have to beware of the dog.
- e. You must beware of the dog.

(7) Sample constructions NOT allowing BEWARE – paradigmatic gaps

- a. *John’s bewaring of the dog was unnecessary.
- b. *John bewares of the dog.
- c. *John bewared / bewore of the dog.
- d. *John doesn’t beware of the dog.
- e. *John has bewared / beworn of many dogs in his lifetime.
- f. *John is bewaring of your dog.
- g. *Bewaring of the dog, John circled the yard.

These seem to have no synchronic motivation. Early studies assumed that most, or all, paradigmatic gaps are similarly anomalous. For example, Halle (1973) refers to the 1sg non-past gaps in Russian (Table 1 in CHAPTER 1) as “arbitrary” and “lexical”. The implication was that the gaps are simply accidental, non-functional historical residue which do not significantly interact with the inflectional system. Formally, he treated these gaps with the feature [-Lexical Insertion], meaning that the verb is generated according to normal, productive inflectional rules, but a lexically specific filter prevents the generated form from being inserted into syntactic structure. In principle, any verb could be marked [-Lexical Insertion].

The perception that gaps are not important for morphological theory has probably been increased by the fact that the most common type of paradigmatic gap – pluralia and singularia tantum nouns (e.g., SCISSORS has only a plural form in English; INFORMATION has only a singular) – is semantically-oriented. Semantically-driven gaps are perhaps interesting for theories of cognition and perception, but they do not interact in significant ways with morphological structure. As a result, it is not obvious at first glance that paradigmatic gaps reveal much about morphological structure, and probably as a consequence, they have traditionally drawn little interest in the context of morphological theory.

That being said, a central premise of this dissertation is that upon closer inspection, we find examples of inflectional defectiveness that are, in fact, reflective of general morphological principles. This idea has only recently gained traction within linguistics, and the nature of the relationship between defectiveness and morphological structure is far from understood. But the largest clue that there is some interaction worth

studying comes from the fact that many examples of paradigmatic gaps are distributed in the lexicon in such a way that they cannot be adequately described without reference to principles of theoretical morphology. As a short demonstration of why morphological theory should pay attention to inflectional defectiveness, I summarize below the empirical facts of just two cases: gaps paralleling morphophonological alternations in Spanish (based on Albright 2003), and gaps tied to paradigmatic dependencies in Icelandic (based on Hansson 1999). While these examples are quite different in the details, in both cases, distributional facts strongly indicate that the defective lexemes are neither accidentally nor idiosyncratically defective. Instead, and perhaps counterintuitively, the Spanish and Icelandic data suggest that at least some paradigmatic gaps result from the normal functioning of the languages' inflectional systems.

2.1.1. Spanish: Gaps that parallel morphophonological alternations (based on Albright 2003)

Albright (2003) distinguishes two types of present tense indicative gaps in Spanish, what he calls anti-stress gaps and anti-egotistic gaps. Anti-stress gaps are demonstrated below on the left; anti-egotistic gaps are on the right.

abolir 'to abolish'	singular	plural	asir 'to grasp'	singular	plural
1st person	*	abolimos	1st person	*	asimos
2nd person	*	abolis	2nd person	ases	asís
3rd person	*	*	3rd person	ase	asen

Table 7: Present tense indicative gaps in Spanish

For present purposes, the important fact about the Spanish gaps is that they exactly follow the distribution of morphophonological alternations. These are exemplified in Table 8, with diphthongization and raising on the left and velar insertion on the right.

sentir ‘to feel’	singular	plural	crecer ‘to grow’	singular	plural
1st person	s[jé]nto	s[e]ntimos	1st person	cré[sk]o	cre[s]émos
2nd person	s[jé]ntes	s[e]ntís	2nd person	cré[s]es	cre[s]éis
3rd person	s[jé]nte	s[jé]nten	3rd person	cré[s]e	cré[s]en

pedir ‘to ask’	singular	plural
1st person	p[í]do	p[e]dimos
2nd person	p[í]des	p[e]dís
3rd person	p[í]de	p[í]den

Table 8: Morphophonological alternations in the present indicative of Spanish

The defective lexemes belong to the inflection class which is “most susceptible to alternations” (Albright 2003:4). For each defective lexeme, gaps are distributed such that “anti-stress verbs are missing forms where diphthongization and raising occur, while anti-egotistic verbs are missing the form where velar insertion occurs” (Albright 2003:4). And the defective lexemes meet the structural conditions for having these alternations. (Note that the converse is not true; not all lexemes that meet the conditions for alternation are defective. In fact, only a minority of such items have paradigmatic gaps.)

This distribution creates several interesting theoretical challenges. For example, Albright convincingly argues that these gaps cannot be adequately described without reference to word-formation rules (i.e., the conditions for the application of a morphophonological alternation), so the distributional facts strongly suggest a failure within the system that generates inflected word-forms. However, because inflectional

morphology is notoriously productive, most models of morphology are structured such that inflectional failure is, by design, impossible. For example, Paradigm Function Morphology relies on the notion of a default realizational rule to guarantee that there is an inflected form corresponding to each cell in the paradigm (Stump 2001b). And in Optimality Theory, the EVAL component by definition always produces an optimal candidate (Prince and Smolensky 2002[1993]). Most models of inflectional structure would thus be forced to account for the Spanish paradigmatic gaps externally to the inflectional system, as unmotivated and random exceptions (e.g., via surface filters that operate after form generation, à la Halle (1973) or more recently Orgun and Sprouse (1999)). Inasmuch as this is an empirically inadequate solution, examples like the Spanish gaps present a theoretical challenge and indicate something about the inner workings of inflectional structure that non-defective (“successful”) forms do not – the ability of word-form generation to fail.¹⁶

2.1.2. Icelandic: Gaps that parallel paradigmatic dependencies (based on Hansson 1999)

Paradigmatic gaps in Icelandic highlight a different aspect of morphological structure. Specifically, Icelandic gaps have a distribution that indicates an interaction between syncretism and defectiveness.

¹⁶ Albright’s specific proposal, essentially that the grammar does not provide enough information about whether the alternation should apply, is discussed in Section 2.2.

In Icelandic, the imperative is formed by adding a coronal suffix plus a subject pronoun (e.g., [-ʏ], ‘2sg’).¹⁷ All examples in this section are adapted from Hansson (1999).

(8) Normal imperative formation in Icelandic

taktu	[t ^h ax-t-ʏ]	‘take!’
sýndu	[sin-t-ʏ]	‘show!’

However, a subclass of lexemes have defective imperatives. All defective lexemes have stems ending in /ll/ or /nn/, but as in Spanish, not all lexemes with these stems have defective imperatives. There are 34 non-defective forms; based on Hansson (1999) it is unclear how many are defective. Examples of lexemes with paradigmatic gaps are given in (9).

(9) Paradigmatic gaps in the imperative

Root	Imperative	
/vinn/	*[vintʏ], *[vɪntʏ]	‘work!’
/spinn/	*[spintʏ], *[spɪntʏ]	‘spin (thread)!’
/fall/	*[faltʏ], *[fɛltʏ]	‘flunk!’

There are thus two empirical facts about the distribution of Icelandic gaps to account for: first, why the gaps cluster in the subclass of ll- and nn-stem verbs; and second, why only a subpart of this class is affected. Hansson argues that an explanation of this distribution rests on a series of generalizations about the imperative and its formal paradigmatic relationship to the past tense.

¹⁷ The pronoun can be either a clitic suffix or a full form separate word, the latter being emphatic. Since this variability has no relevance for the present discussion, I show only imperatives with clitic forms.

First, the imperative gaps follow the distribution of an unexpected pattern of allomorphy. In general, if the stem ends in a sonorant + coronal obstruent, the sonorant is devoiced in the imperative.

(10) Stem allomorphy in the Icelandic imperative

Root	Imperative	
/sinT/	[sɪ̥ntɻ] (< /sinT-T ^h -ɻ/)	‘swim’
/halT/	[hɑ̥ltɻ] (< /halT-T ^h -ɻ/)	‘hold’
/mirT/	[mɪ̥rtɻ] (< /mirT-T ^h -ɻ/)	‘murder’

Sonorant devoicing does not normally occur in the imperative when the stem ends in only a sonorant, even where this results in an identical phonetic sequence. For example, the stem /fɛl/ ‘hide’ has the imperative form [fɛltɻ] (< /fɛl-T-ɻ/), with no devoicing of the /l/.¹⁸ See also ‘show’ in (8).

However, the class of roots ending in /ll/ and /nn/ often show the allomorph which is opposite of this pattern. The phonetic environment should not result in sonorant devoicing, “But in fact, only a minority of verbs in /...ll/ and /...nn/ display the expected behavior” (Hansson 1999:112). Of the non-defective verbs in this class, twenty-seven have sonorant devoicing, and six do not. See (11) and (12), respectively (adapted from Hansson 1999:112; he does not provide glosses).

¹⁸ Hansson argues that this pattern of stem allomorphy indicates that what appears at first to be a single imperative formative actually represents two “input allomorphs”. He labels these /T/ and /T^h/. In his notation, /T/ stands for a coronal non-spread glottis obstruent (unaspirated stop or voiced fricative). /T^h/ stands for a coronal spread glottis obstruent (aspirated stop or voiceless fricative). According to his analysis, /T^h/ attaches to verbs whose stem “...ends in a cluster of sonorant + /T/...” (108). These are the conditions for sonorant devoicing. Lack of allomorphy is indicative of the /T/ imperative allomorph. For the present purposes, nothing rides on this analysis. Only the empirical distribution of sonorant devoicing is important. But I retain his notation in the examples.

- (11) Verbs with stem-final /...ll/ or /...nn/ with ‘expected’ lack of devoicing in the imperative (complete list)

Root	Imperative
/fell/	[fɛltʏ]
/rɛll/	[rɛltʏ]
/t ^h oll/	[t ^h ɔltʏ]
/k ^h enn/	[c ^h ɛntʏ]
/prenn/	[prɛntʏ]
/renn/	[rɛntʏ]

- (12) Verbs with stem-final /...ll/ or /...nn/ with ‘unexpected’ sonorant devoicing in the imperative (not complete list)

Root	Imperative
/fɪll/	[fɪltʏ]
/hell/	[hɛltʏ]
/krɪll/	[cɪltʏ]
/prɪnn/	[prɪntʏ]
/klenn/	[klɛntʏ]
/krenn/	[krɛntʏ]

Inasmuch as this is the only subclass that displays a different stem allomorph than the conditioning environment described above would predict, it seems non-coincidental that the paradigmatic gaps fall within this class. Defectiveness follows the distribution of, and thus seemingly interacts with, allomorphy. There are some parallels here to Spanish.

But even more interestingly, Hansson argues that within this class, the crucial factor dividing defective from non-defective imperatives is past tense formation.

As in most Germanic languages, verbs can be grouped into two major classes with respect to past-tense stem formation. On the one hand, there are the strong verbs, whose past stem consists of the bare root, which is subject to various ablaut alternations (mostly vocalic). The other major class is the weak verbs. Although ablaut-like alternations are also found among verbs of this class, the crucial

property of weak verbs is that their past stem is formed by adding a coronal suffix [the same morph as for the imperative]... the past-tense suffix of weak verbs displays the very same kind of allomorphy alternations as does the imperative suffix. (Hansson 1999:107)

Stems ending in sonorant + coronal obstruent show devoicing of the sonorant in weak past tense forms. Stems with final /l/ or /nn/ are often exceptional to this pattern; if there is devoicing in the imperative there is also devoicing in the past tense (assuming it is a verb with weak past tense formation). If there is no devoicing in the imperative, there is no devoicing in the past tense. For weak verbs, the past tense and the imperative are thus systematically syncretic (Zwicky 1991). For strong verbs there is no syncretism: the past tense has an ablaut pattern, while the imperative is realized with the coronal obstruent suffix.

The distinction between strong and weak past tense forms is important because the key generalization is that within the class of nn- and ll-stems, the verbs with weak past tense forms have well-formed imperatives, while the verbs with ablauting past tense forms have defective imperatives.¹⁹ As Hansson argues, this distribution strongly implies that paradigmatic gaps are sensitive to paradigmatic dependencies that govern inflectional word-form generation (e.g., through an interaction of syncretism and defectiveness).²⁰

¹⁹ According to Hansson, only one verb violates this generalization about the distribution: /finn-/ ‘find’. It meets all of the criteria for belonging to the group with imperative gaps (it has an nn-stem and a strong past tense), but it nonetheless has a well-formed imperative: [fintv]. He suggests (113) that “The explanation for the special behavior of this particular verb appears to lie in the fact that it has a unique root allomorphy, such that the (sub)string [f...nt] does occur elsewhere in its paradigm. This is not true of any of the other verbs in /...nn/.” This suggests that this lexeme does not participate in the same paradigmatic dependencies as other lexemes because it is suppletive, further supporting the idea that paradigmatic dependencies are, in some way, responsible for the Icelandic imperative gaps.

²⁰ One possible interpretation of the data, which differs somewhat from Hansson’s own argument, is that the entire ll- and nn-class might be expected to be defective, except that the pattern of systematic

Overall, the Spanish and Icelandic examples clearly demonstrate that some examples of inflectional defectiveness are integrated with the functioning of the morphological system, and that they can reflect different aspects of that system. Paradigmatic gaps are not (necessarily) the random miscellanea that they were, until quite recently, typically assumed to be. In the broadest sense, the goal of this dissertation is to explore what gaps reveal about the functioning of inflectional systems.

2.2. Major themes in the recent literature on paradigmatic gaps

Recognition that inflectional defectiveness is sometimes intertwined with the morphological system has recently led to a surge of study of paradigmatic gaps. Most of this literature has taken up four major issues:

- Issue 1: How do we reconcile inflectional (and to a lesser extent derivational) defectiveness with theories which necessarily always generate a word-form expressing a given lexeme paradigm cell?²¹ And closely related to this, should gaps be formally accounted for within the word-formation component, or is some surface filter required?

This issue has been driven primarily by the structure and popularity of Optimality Theory (OT). In OT, the EVAL component is responsible for evaluating candidate word-forms, and it by design always produces an output. But paradigmatic gaps represent cases in which there is apparently no output. This contradiction must be reconciled. Most of the debate has centered on whether paradigmatic gaps should be accounted for within EVAL

syncretism allows for a directional relationship (Baerman 2004) in which the imperative takes the form of the past tense when a weak form is available to serve as the model. This could be formalized as a rule of referral (Stump 2001b, Zwicky 1985), or possibly using the more recent hypothesis of paradigm linkage (Stump 2006). It is unclear why allomorphy should trigger defectiveness in the first place, but this would explain why some lexemes within the nn- and ll-class are affected but not others.

²¹ See the Glossary for use of the term *lexeme paradigm cell*.

itself, with the winning output having no phonological form (the so-called Null Output (McCarthy and Wolf 2005, Rice 2006) or Null Parse (Prince and Smolensky 2002[1993])), or whether paradigmatic gaps indicate a second set of surface constraints against which the winning candidate from EVAL is checked, called the CONTROL component (Orgun and Sprouse 1999). CONTROL acts as a surface filter; the result of violating a CONTROL constraint is absolute ungrammaticality, i.e., a gap. The CONTROL component in many respects is an update of classic proposals for lexically specification of defectiveness (Halle 1973, Hetzron 1975).

- Issue 2: How do we account for the fact that in many cases, the distribution of paradigmatic gaps can be described in phonological or morphological terms, but only a subset of the lexemes that meet this description are actually defective? In other words, why are defective lexemes the minority pattern even within the smallest definable morphophonological subclass?

In some languages (e.g. Icelandic) it is possible to identify conditions that are both necessary and sufficient for a lexeme to be defective. However, in many other cases, it is possible to identify only necessary conditions, and not sufficient ones. A well-known example of this problem comes from Hungarian.²²

Hungarian has gaps in multiple places in the verbal paradigm. Hetzron (1975:864) lists paradigmatic gaps in the indefinite imperative (marked by *-j* + person marker), the potential ('may X', marked by *-hat/-het*) and the verbal adverb ('in doing', marked by *-va/-ve*). Törkenczy (2002:314) cites these, and adds the definite imperative (-

²² Several other languages exhibit the same pattern, including Spanish indicative verbs (Albright 2003; described above), Russian 1st person singular verbs (Halle 1973; see Table 1 in CHAPTER 1), and Modern Greek genitive plural nouns.

d). If a verb is defective at all, it is apparently missing all of these forms. Below are examples of paradigmatic gaps in the potential, taken from Törkenczy's work.

- (13) Sample Hungarian verbs with paradigmatic gaps in the potential (also defective in the jussive, verbal adverb and definite imperative, not shown)

Base form	Potential form ('he/it may')	
csuklik	*csuklhat-	'hiccup'
meghasonlik	*meghasonlhat-	'become disillusioned, conflict with'
özönlik	*özönlhet-	'stream in large quantities'
piroslik	*piroslhat-	'shine red'
fogzik	*fogzhat-	'teethe'
patakzik	*patakzhat-	'gush'

The major generalization is that the expected (but defective) forms would have a C{*l,z*}C cluster – the affected lexemes all have stem-final C{*l,z*}, and the suffixal morphs for the potential, jussive, verbal adverb and imperative all begin with a consonant. This is a phonotactically illicit sequence in Hungarian, suggesting that the gaps are tied to the phonotactic violation.

However, many (most?) verbs with this “underlying” C{*l,z*}C cluster in the imperative, potential or adverbial form surface with an epenthetic vowel to break the cluster (Hetzron 1975:864), a kind of repair strategy (e.g., *kotl* + *hat* → *kotolhat*- ‘brood (potential)').²³ Only a subset of the C{*l,z*}C group of lexemes actually has gaps. The question then is why some word-forms break illicit consonant clusters, while others are defective, apparently under the same conditions.

²³ Törkenczy is confusing on this point. He states that gaps appear because “...there is simply no epenthesis or deletion within the stem in Hungarian”, yet his own examples clearly show what Hetzron claims is an epenthetic vowel. It is unclear how these competing arguments should be evaluated.

There are at least two ways to approach this issue. First, the inability to formulate precise morphological or phonological criteria that correctly include all defective lexemes and exclude all non-defective ones has frequently been used to argue that item-by-item lexical specification of defectiveness is necessary (e.g., see Fanselow and Féry (2002) and Hetzron (1975) for Hungarian in particular). But specifying each individual lexeme as defective is often unsatisfactory, because it loses the generalization that affected lexemes form a morphophonologically unified group. Formally, individual lexical specification treats any similarities among lexemes as accidental. Alternatively, in some cases it might be possible to argue that the internal cohesion of the class containing gaps is illusory. This idea has not been followed for Hungarian, but Albright (2003) shows that it is viable for Spanish (see discussion in CHAPTER 5). The core aspects of Albright's analysis are unique in the literature, and the extent to which this approach can be applied to other languages is an open question. But at the very least it promises that defectiveness among a minority of lexemes in a given morphological subclass does not *necessarily* require lexical specification. And it raises the following issues:

- Issue 3: Are gaps synchronically motivated by grammar competition and/or conflict?

Competition-based models of inflection have raised the question of whether competition is always resolved. Competition-based models vary significantly. For example, some theories focus on competition at the morphophonological level, e.g., competition among inflectional rules to apply based on stem shape and other factors (Albright and Hayes' Minimal Generalization Learner (2002) and MacWhinney's

Competition Model (2004)). In other models, competition exists at the morphosyntactic level, meaning that inflectional rules compete to apply to a stem according to specificity of the morphosyntactic property set which they realize, a version of the Elsewhere Condition sometimes referred to as Panini's Principle (Stump 2001b).

Despite these differences, competition-driven theories have one thing in common: they virtually entail the possibility that the competition will not always be resolvable, either because of a direct conflict between grammatical principles (Hudson 2000), or because there is not enough information available to produce a reliable output (Albright 2003, Baronian 2005). Both types of approach suggest that gaps may arise in a language as a result lexemes getting “caught in the cross-fire” between two productive but incompatible generalizations.²⁴

Paradigmatic gaps that are synchronically motivated by morphological structure in this way need not be (ad hoc) lexically specified as defective – in principle they fall out naturally from the competition between morphological rules. For obvious reasons, this possibility has been very appealing.

- Issue 4: How typologically diverse are gaps?

The extent to which gaps in different languages have common properties is still largely unknown. As noted above, several languages seem to have gaps that parallel morphophonological alternations. This includes Modern Greek and Russian, which are discussed in CHAPTERS 4 through 6. In many languages the morphophonological conditions for gaps also resist precise description – as in Hungarian it is possible to

²⁴ Of course, this in itself raises the question of why repair strategies sometimes, but not always, apply under such conditions.

identify necessary morphophonological conditions, but not sufficient ones, since there are many non-defective lexemes of the same type. However, a thorough typological study is still needed in order to determine whether these are typical properties of paradigmatic gaps, or only properties of the few examples which have garnered theoretical interest. Fanselow and Féry (2002) and Baerman and Corbett (2006) present preliminary classifications.

These four issues are interrelated. A model positing lexical specification of defectiveness is most compatible with (surface) filters, not an account situated within the word-formation component. However, if gaps are explained as word-forms caught in the cross-fire between two inflectional rules, this entails an explanation within the word-formation component. Defectiveness as a minority pattern within its subclass has typically been considered indicative of lexical specification, but Albright's paper opens the possibility that morphophonological competition within the generative system may provide a more natural explanation. And the typological range of defectiveness speaks to whether a unitary treatment of gaps is, even in principle, possible.

Among these issues, arguably the most important question to come out of previous research is whether inflectional defectiveness falls out naturally from morphological structure if our model of morphology includes inflectional competition. And if such an explanation is viable, how widely can it be applied? And what is the nature of that competition? These questions are central to an explanation of gaps because they have consequences for all other issues surrounding inflectional defectiveness (e.g., description within the inflection system vs. surface filters, why gaps affect only a subset of lexemes, why gaps tend to cluster among low frequency lexemes, why gaps are not

filled by productive inflection, how gaps are learned, etc.). In this dissertation I take up this issue, but in contrast to previous research, I focus on the role of the paradigm in defining/structuring morphological competition. I explore how paradigmatic competition creates and maintains paradigmatic gaps within Modern Greek and Russian.

2.3. Questions for this dissertation

I focus on two questions that paradigmatic gaps raise for morphological theory in general, and for paradigmatic theories in particular:

1) Are paradigmatic gaps paradigmatically governed? In other words, is reference to paradigmatic structure (e.g. implicational relationships that hold between different cells of the paradigm) necessary to an adequate account of paradigmatic gaps?

2) To what extent can inflectional defectiveness be treated as a byproduct of paradigmatic structure or other aspects of inflectional word-form generation? How often must it be lexically specified? (Or, stated differently, how often are paradigmatic cells stipulated as empty?) Under what conditions? And how do we identify lexically specified defectiveness?

2.4. Summary

While paradigmatic gaps have traditionally been thought of as semi-random miscellanea that need to be specified on an item-by-item basis in the lexicon, recent research has shown that (at least) some gaps seem to be more closely integrated with morphological structure. Perhaps the most important question stemming from this research is the extent to which paradigmatic gaps can be treated as a direct product of competing inflectional patterns. This issue has consequences for our understanding of various aspects of

inflectional structure. In this dissertation I contribute to this discussion, while focusing on the relationship between defectiveness and paradigmatic structure, which to date has received less attention.

CHAPTER 3

THEORETICAL FOUNDATIONS: THE PARADIGM

This dissertation hangs crucially on *the paradigm*, a term which has been subject to many definitions, and a concept which has been incorporated (or not) into morphological theory in a variety of ways. Whether an adequate description of one inflectional form necessitates reference to other inflectionally related forms, the essence of paradigmatic structure, is currently a central question in morphological theory. At least three camps – Word and Paradigm (WP) models, closely related analogical models, and a subset of Optimality Theory known as Optimal Paradigms Theory – argue that there are systematic co-occurrence restrictions and other paradigmatic effects which demonstrate that inflected forms are not atomistic, but rather are integrated into a larger inflectional structure (e.g. Carstairs 1983, papers in Downing et al. 2005, Joseph 2005, Matthews 1972, Stump 2001b, Wunderlich 1995, Zwicky 1985). WP models in particular place connections between inflectional forms at the center of the theory by positing paradigms as theoretical constructs and the locus of inflectional structure. Opponents of the paradigmatic view maintain that paradigms are superfluous and that so-called paradigmatic phenomena may be explained through other theoretical tools (e.g. Bobaljik 2001, Noyer 1998, Raffelsiefen 2005). In this chapter I give an overview of the paradigm as a formal construct in inflectional theory (with a heavy focus on WP models), and the role of the paradigm within a theory of inflectional competition. The

discussion is by necessity greatly simplified, but it provides a basis for the structure that I assume in subsequent chapters.

3.1. The paradigm in traditional Word and Paradigm models

We may think of inflectional structure in the pre-generative world as being fundamentally organized according to two main components – words and paradigms. Bloomfield’s (1933:223) definition of paradigms is representative: “...English nouns occur, for the most part in parallel sets of two: a singular noun (*hat*) and a plural noun derived from the former (*hats*). Given one of these, the speaker is usually capable of producing the other. Each such set of forms is called a paradigmatic set or paradigm.” This definition shows that Bloomfield (among others) conceptualized the paradigm as a system of contrasts among concrete forms of the same lexeme. The paradigm was the vehicle for this system, and the structure used to derive word-forms.²⁵ We might formalize this approach as follows, using the relationship between *hat* (*cat*, *mat*, *wug*...) and *hats* (*cats*, *mats*, *wugs*...) as our example (this is not Bloomfield’s formalism; it is a somewhat more modern conception adapted from Bochner (1993) and Haspelmath (2002)).

$$(14) \quad \left(\begin{array}{c} /X/ \\ N \\ 'x' \\ \text{NUM: SING} \end{array} \right) \Leftrightarrow \left(\begin{array}{c} /Xs/ \\ N \\ 'x' \\ \text{NUM: PLURAL} \end{array} \right)$$

²⁵ It is unclear whether the inflection class was considered to exist apart from the particular word-forms that instantiated it; a non-mentalist view of language made this largely a moot point.

The paradigm was thus a crucial structure; inflected forms are derived (and predicted) from other inflected forms. But not all words are equally good predictors of inflectional patterns. For example, a hypothetical Bosnian/Croatian/Serbian (BCS) verb form *mode* could be either a third person singular present tense form, belonging to the pattern for *ići* ‘to go’ (3.SG.PRES *ide*), or a third person plural present tense form, belonging to the pattern for *raditi* ‘to work’ (3.PL.PRES *rade*). *Mode* is thus a poor predictor of inflection class membership.

<i>ići</i> ‘go’	SINGULAR	PLURAL	<i>raditi</i> ‘work’	SINGULAR	PLURAL
1 ST PERSON	idem	idemo	1 ST PERSON	radim	radimo
2 ND PERSON	ideš	idete	2 ND PERSON	radiš	radite
3 RD PERSON	<u>ide</u>	idu	3 RD PERSON	radi	<u>rade</u>

Table 9: Two BCS verb paradigms demonstrating implicational relationships within paradigms

By contrast, in BCS all of the first and second person forms are excellent predictors; if we know that the hypothetical verb is *modem* in the first person singular form, we are able to absolutely determine all of the other word forms because the first person singular uniquely signals the inflection class that it belongs to, and by extension all other word-forms. Forms which share this sort of relationship with inflection classes are traditionally called *principal parts*.²⁶ We can thus think of the (pre-generative) paradigm as the instantiation of a set of implicational relationships between individual word forms on one level and between words and the more abstract notion of inflectional class on another.

²⁶ The formal notion of a principal part has recently been resurrected by Stump and Finkel (2006).

These relationships serve more purposes than simply delineating inflectional types. For example, they offer an explanation for four-part analogy (15).

(15) A typical example of four-part linguistic analogy

dog	:	dogs
cow	:	X
<hr/>		
X = cows		

Historically, *cow* had the plural form *kine*. Speakers arrived at *cows* because abductive reasoning led to the conclusion that the implicational relationship in (14) probably holds for the observed word *cow*. Innovation is possible here because abductions leak; some word forms are bad predictors, i.e. they implicate more than one inflectional pattern.

Taking *cow* as the observation, two patterns were implicated: *cow-cows* (innovative) and *cow-kine* (historical). Either pattern could be abducted, but when abductive logic results in an innovative pattern (*cow-cows*), this is analogical change (Andersen 1973, 1978). In traditional WP models, then, analogy was fundamentally paradigmatic in nature because abductive reasoning is rooted in connections among inflectional forms and the not-always-perfect ability to predict from one form to the other.²⁷

Form-level implicational relationships of this type are still central to analogy-based morphological theories (Albright and Hayes 2002, Baayen and Martín 2005, Bochner 1993, Bybee 1985, Daugherty and Seidenberg 1994, MacWhinney and Leinbach 1991, Pierrehumbert 2001, Rumelhart and McClelland 1986, Skousen 1989).

²⁷ Moreover, the prevalence of analogy among inflectionally related forms but its relative paucity among derivationally related forms indicates that different connections are made across the two types of relations. This supports the traditional organization according to inflectional but not derivational patterns (Joseph and Sims 2006).

3.2. The (lack of a) paradigm in most generative, morphemic theories

3.2.1. Classic generative grammar

Classic generative grammar treated analogy as a deductive rather than abductive logic process. In deductive reasoning a person starts with a rule, applies it to a particular case, and produces a result which is in line with the rule; the conclusion is of no greater generality than the input conditions. In the classic generative approach, analogy is extension of a rule to a new underlying form, or constriction of a rule so that it no longer applies to an underlying form. This makes analogy no different than other word formation processes, except that from a diachronic perspective we can see that the scope of the generalization has changed over time.

The reconceptualization of analogy as a relationship between underlying and surface forms generally produces the same result as the pre-generative approach, but with a different kind of explanatory force. In the (early) generative view, the force behind analogy lay not in the “leaking” of implicational relations between words and inflection classes, but in the claim that grammatical systems value simplicity.²⁸ Analogy represented either the removal of rules of allophonic variation, or extension of rules to broader conditioning environments.

²⁸ The hypothesis of grammar simplification as motivation for language change has drawn widespread and justified criticism. See Thomason (1976) for an early argument.

The issue to which I should like to address myself here is analogical change. Traditionally visualized as the extension of surface patterns (in terms of proportional schemata) it has more recently been given another interpretation as the elimination of arbitrary complexity in the linguistic system... At the back of this lies a new view about the nature of the concrete process of analogical change and how it relates to the acquisition and use of language. A proportional view of analogy fits naturally into a theory of language acquisition based on substitution-in-frames techniques and equivalent 'taxonomic' devices. The idea that analogy is simplification of grammar jibes better with the idea that language acquisition is based on a general rule schematism in conjunction with an evaluation measure which selects the simplest grammar... (Kiparsky 1978:78)

In this reconception there was no longer need for direct relations between surface forms. Inflectionally related forms were connected by virtue of having the same underlying form, and it was argued that this connection could be used to account for so-called paradigmatic effects like analogy without any formal theoretical equivalent to the paradigm. I describe a modern example of this argument in the following section.

3.2.2. Modern generative, morphemic theories

Modern morphological theories are split with regard to the need for paradigmatic structure, but most generative, morpheme-based approaches follow the classic generative approach. To take a single example, input-output relations are still central to most versions of Optimality Theory (OT) for describing phenomena like paradigm uniformity (Kiparsky 2000, Wedel 2004).²⁹

In synchronic terms, paradigm uniformity is the lack of a morphophonological alternation within the paradigm where that alternation would be expected based on

²⁹ An exception is the recent work of McCarthy (2005), and work that has followed his lead (Downing 2005, Lloret to appear 2004, Rice 2005). McCarthy argues that entire inflectional paradigms are candidate outputs. This allows McCarthy to account for paradigm uniformity as an output-output effect – a constraint states that all inflectionally-related forms of the same lemma must be identical.

phonological criteria.³⁰ For example, in Czech, palatal stops (including nasals) are rarely followed by the back vowels /o/ and /u/ stem-internally, and there is a general phonological constraint against the palatal-back vowel sequence.³¹ However, word-form paradigms may have a stem-final palatal stop throughout, even in those oblique forms that involve suffixes beginning with back vowels, e.g., [ohpɲ-u:] and [ohɛpɲ-u:m], the genitive plural and dative plural forms of *ohěň* ‘fire’, respectively (example from Sturgeon 2003:465).

In a basic OT formulation, it is possible to capture paradigm uniformity effects by using correspondence constraints, which force some relation between input and output forms.³² For example, IDENT(I,O) forces inputs and candidate output forms to be segmentally identical. In OT, the relative ranking of constraints is more important than the absolute number of violations that a form incurs. Thus, if IDENT outranks phonotactic constraints, it is more important for the candidate surface form to be faithful to the underlying form than to comply with phonotactic constraints. As a result, morphological concatenation leads to phonotactic violations when the juxtaposed sounds are not generally licit in the language.³³ Importantly, because all inflected forms of a word share the same underlying root, and have the same constraint rankings, the result is paradigm

³⁰ The term *paradigm uniformity* is used in both diachronic and synchronic senses. In language change, paradigm uniformity is the end-state result of paradigmatic leveling, “...the complete or partial elimination of morphophonemic alternations within paradigms” (Hock 1991:168). This sense is obviously related to, but not coterminous with, the synchronic sense of paradigm uniformity.

³¹ While noting that this is generally true, Short also states that palatals + back vowels are possible in “expressive” (i.e. derogatory) lexemes (Short 1993:459).

³² Correspondence constraints can also be used to formulate output-output relations, but this is not relevant here.

³³ It is not possible for IDENT to force phonotactic violations except at concatenation boundaries due to the postulation of Richness of the Base (Smolensky 1996a).

uniformity. Thus, a direct relationship between inflected forms is not necessarily required.

There is not space here to explore all of the ways that modern generative, morphemic approaches have accounted for apparent paradigmatic phenomena without recourse to formal paradigmatic structure.³⁴ But the important point is that many modern theories are like earlier generative approaches in using the paradigm only as a convenient heuristic – a descriptive tool of linguists but not a theoretical construct.

3.3. The rebirth of Word and Paradigm models

In recent years, some frameworks of morphological study have reincorporated connections among inflectionally related forms. Hockett (1954) and Robins (2001[1959]) in many respects were the inspiration for this trend, but Matthews (1972) was, for all significant purposes, the spark which has led to the current rebirth of Word and Paradigm accounts. The return to a claim that inflectional structure is fundamentally organized according to paradigms was driven largely by inflectional phenomena which seem to require reference to multiple inflectional forms (and/or inflectional property sets), or for which generating a form without such references misses significant generalizations.

The relevant data for modern WP models has been various, but has largely followed a track in which the connections needed between inflectionally related words are not at the level of surface forms, but at the level of morphosyntactic properties and stems. It has included paradigm economy (Carstairs 1983), parasitic formations

³⁴ See the following section for short discussion of attempts within Distributed Morphology to describe syncretism (Bobaljik 2001, Halle 1997, Noyer 1998).

(Matthews 1972, Morin 1990) and especially form-meaning mismatches such as syncretism.³⁵

Syncretism is a cross-linguistically common phenomenon in which two sets of inflectional properties share the same exponent (see Baerman et al. (2005) for a typological survey and analysis). Consider the following noun classes from Bosnian/Croatian/Serbian (BCS).

o-stem masculine pattern ('window')			a-stem pattern ('woman')		
	SINGULAR	PLURAL		SINGULAR	PLURAL
NOM	prozor	prozori	NOM	žena	žene
ACC	prozor	prozore	ACC	ženu	žene
GEN	prozora	prozōrā	GEN	žene	žēnā
DAT-LOC	prozoru	<u>prozorima</u>	DAT-LOC	ženi	<u>ženama</u>
INSTR	prozorom	<u>prozorima</u>	INSTR	ženom	<u>ženama</u>

o-stem neuter pattern ('sea')			i-stem pattern ('thing')		
	SINGULAR	PLURAL		SINGULAR	PLURAL
NOM	more	mora	NOM	stvar	stvari
ACC	more	mora	ACC	stvar	stvari
GEN	mora	mōrā	GEN	stvari	stvari
DAT-LOC	moru	<u>morima</u>	DAT-LOC	stvari	<u>stvarima</u>
INSTR	morom	<u>morima</u>	INSTR	stvari, stvarju	<u>stvarima</u>

Table 10: Four Bosnian/Croatian/Serbian inflectional paradigms

As these examples show, in BCS the form of the dative-locative plural is the same as the form of the instrumental plural across all inflectional classes, regardless of the form

³⁵ Paradigm economy is the observation that inflected forms of a word are not randomly drawn from the set of possible forms, i.e. that inflectional classes exist. For example, a language with three accusative singular suffixes (A, B, C) and three accusative plural suffixes (D, E, F) might be expected to present nine combinations, but as Carstairs (1983) notes, this is overwhelmingly not the case. All of the lexemes with accusative singular suffix A may have accusative plural suffix D, and vice versa, with no instantiations of the remaining combinations: (A, E), (A, F), (B, D), or (C, D). Parasitic formations are inflected words which have as their stems other inflected forms.

itself.³⁶ Inasmuch as this syncretism is systematic, it is arguably a distributional fact which morphological theory needs to capture. Proponents of WP approaches argue that the paradigm is necessary in order to do so. Zwicky (1985) suggests that syncretism is indicative of a direct relationship between the syncretic paradigm cells. He proposed capturing this as a rule of referral, a statement to the effect that the form of the dative-locative plural is the same as the form of the instrumental plural, and vice versa.

But is it possible to account for syncretism without paradigmatic structure? The best possibility is to argue that the dative-locative plural and instrumental plural are identical as a result of having a shared morphosyntactic representation. A shared morphosyntactic representation could result from either underspecification of morphosyntactic properties or feature change. In a realizational theory, identical morphosyntactic properties would then license the same morphological rules, resulting in syncretism. Noyer (1998) attempts a formulation of this sort within Distributed Morphology using Impoverishment, which is essentially unidirectional feature changing based on markedness (change towards the unmarked value). However, Noyer's account is an improvement over rules of referral only if there are independently motivated criteria for markedness values, or significant constraint on feature changing, or both. In a response to Noyer's paper, Carstairs-McCarthy (1998) demonstrates that Impoverishment is neither as constrained as Noyer posits (perhaps no more so than rules of referral), nor are the markedness values always consistent. Moreover, he argues that

³⁶ The distinction between dative and locative in BCS is largely a historical one. In the modern language the "dative" and "locative" forms are always identical, with the minor exception of prosodic differences in a handful of forms by some but not all speakers (Browne 1993). However, it is still part of the BCS grammatical tradition to distinguish between the dative and the locative. The joint term dative-locative is used here to reflect that tradition, and to save space (prosodic differences are not orthographically encoded in BCS). I do not stake a position on whether dative and locative are separate cases.

Impoverishment is empirically inadequate in some cases, making the wrong predictions about syncretic patterns. Thus, it is formally possible to account for syncretism without explicit reference to other inflected forms, but unlike paradigm uniformity and perhaps analogy, an adequate account of syncretism seems to be most satisfactorily captured by a direct relationship between inflectional paradigm cells.

3.3.1. Similarities to traditional Word and Paradigm models

In many respects, modern WP models operate under the same fundamental assumptions as more traditional ones. As Blevins (to appear 2006) notes, the core features of all Word and Paradigm theories include:

- The postulation that the word is the most basic level at which form is connected to (inflectional) meaning;
- The claim that inflected word forms are determined, at least in part, by connections to other inflectional paradigmatic cells;
- Competition for syntagmatic slots;
- Panini's Principle/morphological blocking/Elsewhere Condition/disjunctive ordering; and
- What Blevins calls "paradigmatic deduction", the principle that speakers can interpret inflectional properties despite the absence of an overt marker, or sometimes because of the absence of an overt marker, because inflectionally related forms derive their meaning from the paradigmatic oppositions they enter into.

Taking these in turn, the first point means that Word and Paradigm models are non-morphemic (see Section 3.3.2 for a qualification of this claim). While there may be correlations between inflectional properties and subparts of words, those subparts do not inherently carry the relevant inflectional properties. Instead, the properties are inferred from the presence (or absence) of a marker in relation to the presence/absence of markers on inflectionally related forms. Coinciding with non-morphemic assumptions are two other tenets: inflectional morphological rules are process-based and realizational. In process-based morphology, generation of an inflected word form may include concatenation but need not – lenition, deletion, ablauting, and a wide variety of other stem-modifying processes are also formally available. A theory is realizational if the presence of inflectional properties licenses the application of an inflectional rule. This means that unlike in many theories (Lieber 1992, Selkirk 1983), rules do not add inflectional properties. A theory may be realizational but not paradigmatic (e.g., Distributed Morphology), but the opposite is much less common. See Stump (2001b) for discussion of these fundamental differences between inflectional theories.

The nature of the connections between inflectionally related forms has already briefly been discussed in the context of syncretism and is also the topic of the following section.

Syntagmatic competition means that the realization of one set of inflectional properties precludes the overt realization of others that occupy the same slot.³⁷ These

³⁷ Slots are often represented as positions relative to the stem, e.g. first prefixal position, perhaps because the most common (or at least most canonical) realization of morphological categories is via affixation. However, this is a shorthand in WP models, and not a necessary interpretation. In reality, slots are more abstract, as evidenced by cases where inflectional realization does not involve concatenation. See Anderson (1992) for an argument that morphological theory needs slots.

may be disjoint sets, as in the Yimas example from (1) above, repeated as (16).

Remember that in Yimas, the negation marker *ta-* precludes the overt realization of the second person singular nominative affix *ma-*. Wunderlich (2001) treats the (b) example as a having a gap (!), but in WP terms, this complementary distribution indicates that the rule prefixing *ma-* and the rule prefixing *ta-* occupy the same slot and compete to be realized.

(16) Nominative agreement affixes in Yimas (Wunderlich 2001:349)

- a. *ma-ŋa-tpul*
2SG.NOM-1SG.ACC-hit
'You hit me.'
- b. *ta-ŋa-tpul*
NEG-1SG.ACC-hit
'You didn't hit me.'

Syntagmatic competition also takes place between inflectional property sets that are in a superset/subset relation, rather than being disjoint.

Panini's Principle (Stump 2001b), which goes by several names, states that more specific examples block more general examples. This is the actual mechanism guiding syntagmatic competition between various realizations of the same inflectional property set.

Paradigmatic deduction can be demonstrated with the BCS word *muž* 'husband'. It is interpreted as nominative singular, despite not having an affix marking it as such, because it is not anything else – not nominative plural (*muževi*), not accusative or genitive singular (*muža*), not accusative plural (*muževe*) or genitive plural (*muževa*), or

any of the other members of the paradigm. It is interpretable as nominative singular by virtue of its opposition to these forms. Paradigmatic deduction is not restricted to zero-suffixed forms, however. *Muževi* contains an overt morph *-ev-i*, but in a WP model it likewise is interpreted as nominative plural not because of this morph, but because of its opposition to *muž*, *muža*, etc. Also see the Yimas example in (16), where the second person singular nominative value is interpreted under negation, despite the lack of an overt form.

3.3.2. Differences from traditional Word and Paradigm models

Modern WP models also, in many respects, differ from traditional WP models and differ from each other. In this section I outline relevant major differences between traditional WP models and Paradigm Function Morphology (PFM, Stump 2001b), as representative of a currently popular type of WP model. I closely follow Blevins (to appear 2006).

First, the earlier definition of the paradigm as implicational relations drawn from inflectional forms has largely shifted to a definition based on inflectional properties.

Spencer's work represents a typical approach within modern paradigm-based theories: "I follow contemporary morphologists in appealing to a more abstract notion of paradigm, one which is at one level of abstraction removed from the list of forms. In this sense, a paradigm is a definition of the set of morphological contrasts that a given class of lexemes can make" (Spencer 2004:72). Details of this formulation are given in Section 3.4, but the point here is that the term *paradigm* has actually become ambiguous – it is used to represent either the set of word-forms, or the set of morphosyntactic contrasts

that those word-forms represent, or both. This conceptual separation of word-forms and the properties that they express will be important in later chapters.

Second, to call PFM and similar theories *Word* and Paradigm models is a misnomer, in a sense, because the fundamental structures for the theory are not paradigms and words, but rather, paradigms and stems (Anderson 1992, Aronoff 1994, Stump 2001b).

Third, Blevins describes modern WP models as hybrids between morphemic and non-morphemic theories, and the term is apt. While inflectional properties are carried by the entire word rather than subparts of the word, which makes PFM like other WP approaches, PFM is unlike traditional WP models in that word-forms are generated from stems. This makes it impossible to avoid some morphemic assumptions. Thus, it might be better said that WP models are partially morphemic; only inflection (not derivation) is clearly non-morphemic.

Fourth, traditional and modern WP models have opposite assumptions about which is basic – the inflectional class, or the instantiations of it. In traditional WP models, the inflection class is derived from particular instantiations. In other words, it is the word-forms which are basic and the classes are, in a sense, epiphenomena. In PFM, the classes are basic. Stems are marked for membership in a particular inflectional class, and word forms are generated based on that classification.

Of course, not all current Word and Paradigm theories share these characteristics. There are several theories which are rooted in whole word forms with patterns abstracted away from those forms, and in some respects these theories are thus more similar to traditional WP accounts. They vary quite a bit in the details, but include Janda and

Joseph's theory of morphological constellations (Janda and Joseph 1999), Bybee's connectionist-based model (Bybee 1985), Lexical Relatedness Morphology (Bochner 1993), and probably most importantly, a variety of analogical models (Pierrehumbert 2001, Skousen et al. 2002).³⁸

In many respects I tread a path between stem-based and word-based theories. I assume that both inflected words and stems are stored in and accessed from the lexicon, along the lines of the Morphological Race Model (Schreuder and Baayen 1995). Fully inflected forms are accessed from the lexicon when direct access speeds processing. I do not have much to say about the conditions under which this is true, but the interested reader is referred to the psycholinguistic literature on (parallel) dual route models (Alegre and Gordon 1999, Baayen and Schreuder 1999, Bertram et al. 2000, Caramazza et al. 1988, Clahsen et al. 1997, Hay 2001, 2003, Jarvikivi et al. 2006, Schreuder and Baayen 1995).

Assuming that fully inflected words are stored in the lexicon requires me to reject one common principle of stem-based WP models – that a goal of morphological theory is to remove redundancy. However, I otherwise assume the basic tenets of PFM, including that when word-forms are generated (rather than being directly accessed in the lexicon), this involves operations applying to stems, as described above.

3.4. The structure of modern Word and Paradigm models

As in the previous section, here I focus on paradigmatic structure within Paradigm Function Morphology (PFM, Stump 2001b), with some contribution from Network

³⁸ Construction morphology (Booij 2002) also makes many of the same assumptions about the primacy of exemplars, but without much of the explicitly paradigmatic approach of the other theories.

Morphology (Brown et al. 1996, Hippisley 1999, Hippisley et al. 2004), rather than discussing the full range of WP models.

3.4.1. Separation Hypothesis: A conceptual distinction between morphosyntactic properties and morphophonological form

An important feature of modern WP models is a conceptual distinction between morphosyntactic property sets on the one hand, and morphophonological form on the other. This is often termed the Separation Hypothesis (Beard 1995). Unbundling form from meaning in a way that is not possible in an incremental morphemic theory allows for one-to-many and many-to-one relationships between form and meaning to be described in a straightforward way.

One way to formalize the Separation Hypothesis is in terms of separate paradigms. Stump argues that inflectional structure is defined by two paradigms, rather than one, because

Paradigms can be seen as participating in the definition of two different grammatical domains. On the one hand, paradigms are objects defined by a grammar's morphological component: the paradigm of a root R is the inventory of cells that can be projected from R... In the syntactic domain, paradigms enter into the definition of phrasal constituents: the paradigm of a lexeme L is the inventory of syntactic atoms which may instantiate L in phrase structure (Stump 2001a:147-8).

Accepting this view, we can demarcate two formally distinct types of paradigms: the lexeme paradigm and the stem paradigm.³⁹ The lexeme paradigm, also known as the syntactic paradigm or content paradigm, contains lexemes paired with morphosyntactic property sets. It represents syntactic constructs that are morphologically expressed. The

³⁹ The relevant terminology has not been standardized. See the GLOSSARY for the terms and definitions that I am using.

stem paradigm, also known as the morphological paradigm or form paradigm, contains stems paired with inflectional property sets. It represents morphology-internal constructs, such as inflection class membership and inflectional properties (which may or may not be the same as morphosyntactic property sets). We may also conceptually include a word paradigm, which are the actual phonological forms that are the realization of the combined stem- and lexeme paradigm cells.

These paradigms are linked to each other. Cells in stem paradigms are linked on one end to corresponding words via inflectional rules, and on the other end to cells in the lexeme paradigm. Inflectional rules (typically called *realization rules* in a PFM framework) specify the mapping between cells of the stem paradigm and inflected words by dictating the inflectional processes that a stem undergoes, based on inflectional properties, stem shape and inflection class. Links between stem and lexeme paradigms specify which cells from the stem paradigm will generate words; every cell in the stem paradigm which is linked to a cell in the lexeme paradigm will normally result in a word-form.⁴⁰ Since the lexeme paradigm provides morphosyntactic information, a form generated from a stem paradigm cell which does not have a link with a lexeme paradigm cell could not be inserted into syntactic structure because it would be, quite literally, void of morphosyntactic properties. There is thus no reason for such a word to exist.

The linkages between the lexeme paradigm and the stem paradigm also determine in large part how morphosyntactic meaning become associated with morphophonological form. These linkages may connect paradigmatic cells in a variety of ways. In the normal case, the inflectional properties contained by a cell of the stem paradigm match the

⁴⁰ Of course, this may not be true in the case of paradigmatic gaps...

morphosyntactic properties in the respective cell in the lexeme paradigm. As a demonstration, consider the following paradigms for BCS word *prozor* ‘window’.⁴¹

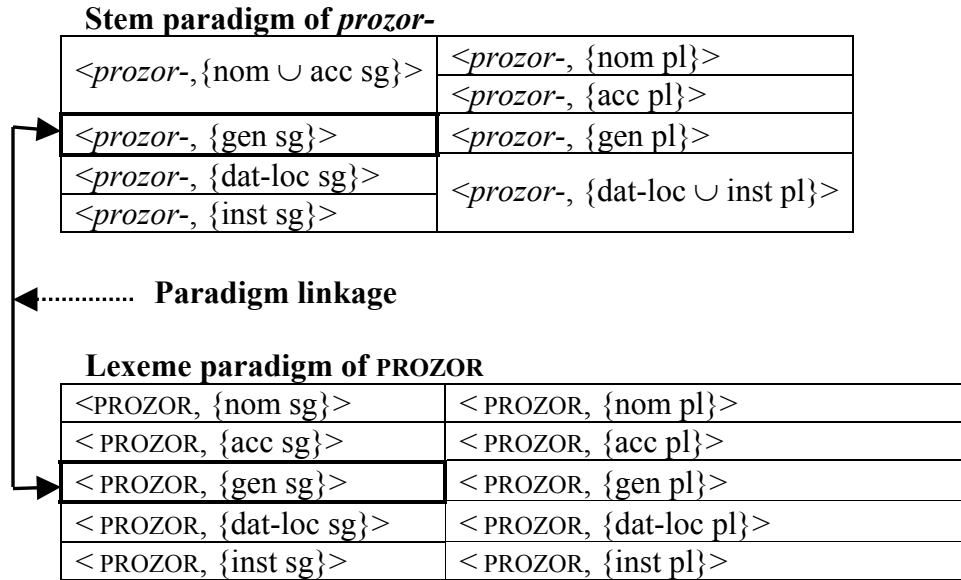


Figure 2: A biunique linkage between the lexeme and stem paradigms of the BCS noun PROZOR ‘window’

The solid arrow represents the connection between the lexeme and stem paradigm cells for the genitive singular. This connection is one-to-one (biunique); the lexeme paradigm cell $\langle \text{PROZOR}, \{\text{gen sg}\} \rangle$ is connected to a single cell in the stem paradigm, $\langle \textit{prozor-}, \{\text{gen sg}\} \rangle$. The stem paradigm cell has realizational rules apply to it to produce the word *prozora*, and the lexeme paradigm cell supplies the morphosyntactic properties associated with that word: $\{\text{gen sg}\}$.⁴² This type of biunique linkage between stem paradigm cells

⁴¹ To provide grounding for the terminology introduced in the GLOSSARY, PROZOR is the lexeme, $\langle \text{PROZOR}, \{\text{gen sg}\} \rangle$ is a lexeme paradigm cell, *prozor* is the stem, $\langle \textit{prozor-}, \{\text{gen sg}\} \rangle$ is a stem paradigm cell, and $\langle \textit{prozora}, \{\text{gen sg}\} \rangle$ is a word or word-form.

⁴² Admittedly, in this case it is ambiguous whether the properties come from the stem paradigm or lexeme paradigm, but there are other cases (e.g., heteroclis) where it must be claimed that the lexeme paradigm provides morphosyntactic properties.

and lexeme paradigm cells that contain the same properties (in this case, {gen sg}) is the most normal output of the morphology.

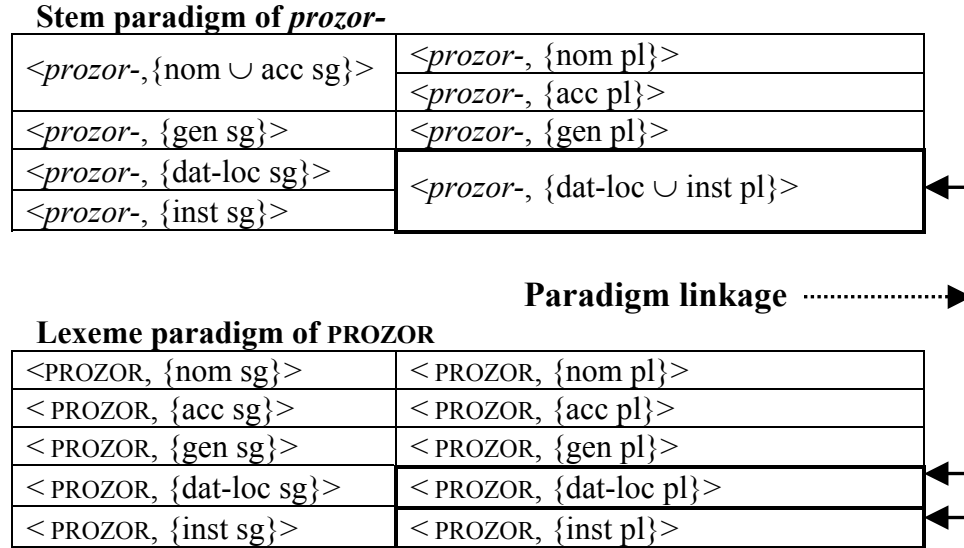


Figure 3: Syncretism in the BCS noun PROZOR ‘window’

However, the linkages need not connect paradigms in a one-to-one fashion. For example, one way to analyze syncretism is as a mismatch between the lexeme and stem paradigms (Stump 2006). In such an analysis, nominal syncretism involves two lexeme paradigm cells that contain distinct morphosyntactic properties, but share a stem paradigm cell. Taking *prozor* again as an example, this linkage may be graphically represented as in Figure 3. One cell of the stem paradigm, $\langle \textit{prozor-}, \{\text{dat/loc} \cup \text{inst pl}\} \rangle$, is linked to two cells in the lexeme paradigm, $\langle \text{PROZOR}, \{\text{dat-loc pl}\} \rangle$ and $\langle \text{PROZOR}, \{\text{inst pl}\} \rangle$, resulting in two words, $\langle \textit{prozorima}, \{\text{dat-loc pl}\} \rangle$ and $\langle \textit{prozorima}, \{\text{inst pl}\} \rangle$. This formalism captures the idea that syncretism represents a distinction at the level of morphosyntactic properties which is collapsed at the level of morphophonological form.

In principle, there is virtually no limit to the kinds of linkages that can be made between lexeme and stem paradigms. For example, a single lexeme paradigm may be linked to multiple stem paradigms. When these stems belong to different inflection classes, this is classically known as heteroclisis. The Croatian lexeme *DIJETE* ‘child’ provides an example, modeled after Stump (2006).

<i>dijete</i> ‘child’	SINGULAR	PLURAL
NOM	dijete	djeca
ACC	dijete	djecu
GEN	djeteta	djece
DAT-LOC	djetetu	djeci
INSTR	djetetom	djecom

Table 11: Paradigm of BCS word *DIJETE* ‘child’

In the singular, the inflected forms of *DIJETE* follow the o-stem neuter singular pattern, but in the plural the forms correspond to the a-stem singular pattern. By contrast, Compare the forms of *DIJETE* with the o-stem and a-stem inflectional patterns in Table 12 (repeated from Table 10 above). However, the plural forms of *DIJETE* do not behave morphosyntactically like a-stem nouns.

o-stem neuter pattern (‘sea’)			a-stem pattern (‘woman’)		
	SINGULAR	PLURAL		SINGULAR	PLURAL
NOM	more	mora	NOM	žena	žene
ACC	more	mora	ACC	ženu	žene
GEN	mora	mōrā	GEN	žene	žēnā
DAT-LOC	moru	morima	DAT-LOC	ženi	ženama
INSTR	morom	morima	INSTR	ženom	ženama

Table 12: Two BCS nominal paradigms, repeated

(17) Examples of verbal agreement for the BCS word *dijete* ‘child’

- Mora* *su* *bila* *široka.*
sea- O-STEMNEUT.NOM.PL AUX.3.PL be- NEUT.PL.PAST wide-NEUT.PL
'The seas were wide.'

- | | | |
|------------------------------|-----------|-----------------------------|
| <i>Žene</i> | <i>su</i> | <i>došle.</i> |
| woman- <u>A-STEM</u> .NOM.PL | AUX.3.PL | arrive- <u>FEM.PL</u> .PAST |
| ‘The women arrived.’ | | |

- Djeca* *su* *došla.*
child-A-STEM.NOM.SG AUX.3.PL arrive-NEUT.PL.PAST
'The children arrived.'

⁴⁴ In reality, the situation is more complex. Some agreement targets, such as verbs, routinely take neuter plural agreement, but other targets often appear with feminine singular agreement. The pattern seems to follow the Agreement Hierarchy (Corbett 1991). For a true account of this pattern, we would need to assume some sort of interference between inflectional and morphosyntactic properties. This is essentially the approach followed by Wechsler and Zlatić (2000) and Kathol (1999).

In Paradigm Function Morphology terms, this pattern can be described by linking a singular a-stem paradigm cell to the plural cells of the lexeme paradigm. Here 1 and 2 are used as shorthand for inflection class membership, where 1 = o-stem neuter class, and 2 = a-stem feminine class. *Dijet*₋₁ thus indicates that the stem *dijet*- belongs to the o-stem neuter class.

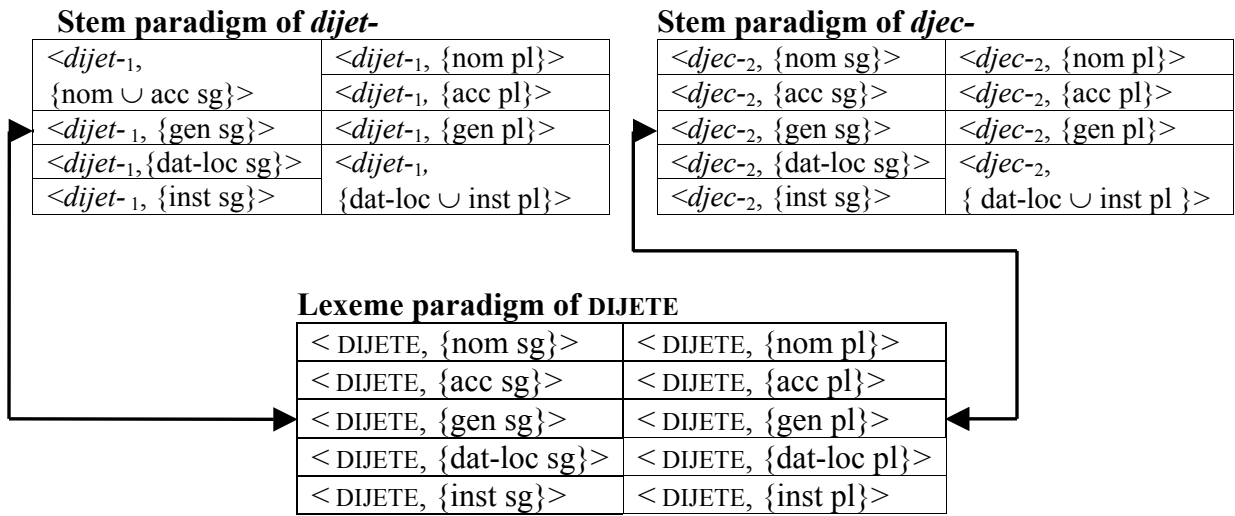


Figure 4: Lexeme and stem paradigms of the heteroclite BCS noun DIJETE ‘child’

Thus, by conceptually separating morphosyntactic meaning from morphophonological form, PFM is ideally suited to describe heteroclisis, syncretism and other form-meaning mismatches.

3.4.2. Default inheritance: Paradigms as nodes in tree structure

Equally important is the idea that stem paradigms are not isolated entities, but rather are connected to each other in the lexicon via a static information-sharing network. We can see the need for a network structure by looking again at BCS inflectional patterns:

o-stem masculine pattern ('window')			o-stem neuter pattern ('sea')		
	SINGULAR	PLURAL		SINGULAR	PLURAL
NOM	prozor	prozori	NOM	more	mora
ACC	prozor	prozore	ACC	more	mora
GEN	<u>prozora</u>	<u>prozōrā</u>	GEN	<u>mora</u>	<u>mōrā</u>
DAT-LOC	<u>prozoru</u>	<u>prozorima</u>	DAT-LOC	<u>moru</u>	<u>morima</u>
INSTR	<u>prozorom</u>	<u>prozorima</u>	INSTR	<u>morom</u>	<u>morima</u>

Table 13: Partially overlapping inflection classes in BCS

In the genitive, dative-locative and instrumental, the neuter o-stems and the masculine o-stems have the same inflectional exponents. However, the nominative and accusative morphs are different for neuter and masculine nouns. If we treat inflection classes as isolated entities, we are forced to posit two classes, and treat the partial overlap as coincidental. This is intuitively unsatisfactory. However, organizing stem paradigms into a network structure (technically, a tree graph) with inheritance of inflectional information allows us to capture that the classes involve some of the same rules of exponence. The following description closely follows the framework of Network Morphology (Brown et al. 1996, Corbett et al. 2001, Hippisley 1999).

The relationship between stem paradigms can be represented as a tree in which the lowest nodes are stem paradigms. The higher nodes may be thought of as paradigms at greater levels of abstraction (metageneralizations in the terminology of Stump (2001b) or templates in the terminology of Aski (1995) and Hippisley et al. (2004)). Nodes that share a mother are more closely related to each other than nodes that do not.⁴⁵

Mother nodes share information with daughter nodes by default (hence the term *default inheritance hierarchy*), unless the daughter node has lexically specified

⁴⁵ It is possible to quantify this distance, but there is no need in this work to do so.

information that is more specific than the information on the mother node, in which case the information on the local node overrides inheritance. In Figure 5, the information in bold italics is introduced at that hierarchical node; the information in plain face is inherited from higher nodes.

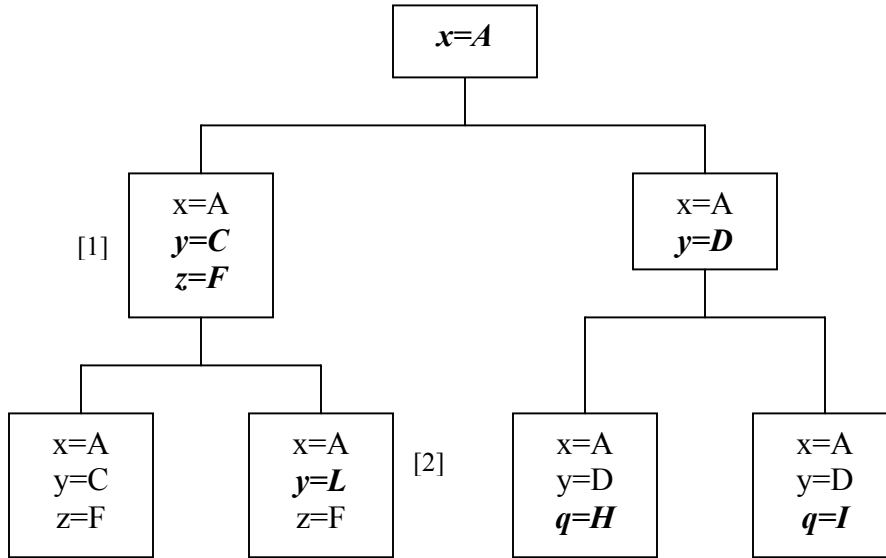


Figure 5: Schematization of information sharing in a default inheritance network

Here, the information ‘x=A’ is inherited by all lower nodes. However, the information ‘y=C’ is not inherited by all daughter nodes of node [1]; node [2] locally one specifies the information ‘y=L’, blocking inheritance of ‘y=C’.

The relationship between mother and daughter nodes is not strictly hierarchical – daughter nodes may inherit from more than one mother node. This means that contradictory information might, in theory, be inheritable by a single daughter node from two mother nodes. In this case, it is typically assumed that one mother node has precedence in feature sharing (Hippisley 1999), thereby maintaining the principle of

monotonic inheritance.⁴⁶ This is represented in Figure 6, where node [1] is given precedence over node [2], as reflected in the inheritance of ‘z=G’ on node [3].

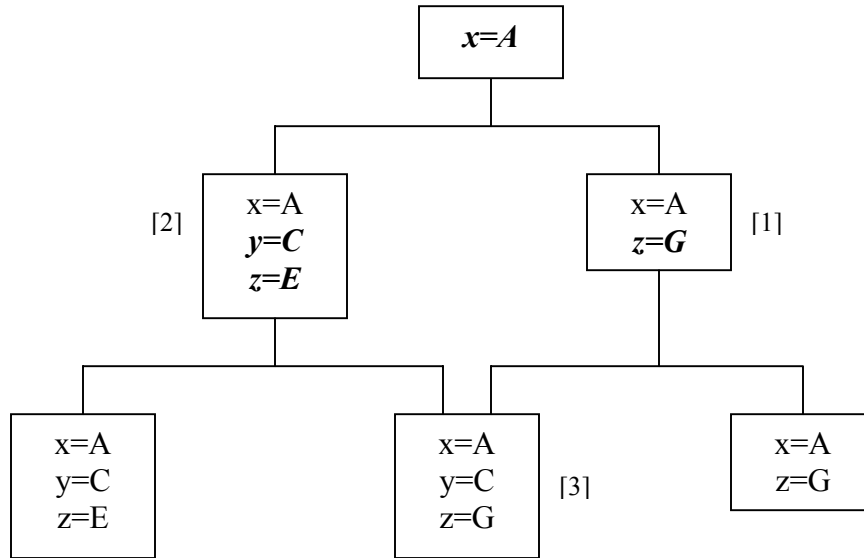


Figure 6: Inheritance from multiple mother nodes

It is also possible for nodes to specify other nodes as the source from which a particular form is inherited, even when contradictory to the path of inheritance. This is an extension of the mechanism of rules of referral. In the network, rules of referral may operate not only within a given stem paradigm (Zwicky 1985), but also between two any two nodes in the inheritance hierarchy, and therefore between any stem paradigm cells.

The role of default inheritance networks can be made more concrete by considering how this system allows for BCS syncretism between dative-locative plural and instrumental plural (see Table 10 in Section 3.3 above). The account of syncretism that is represented graphically in Figure 3 in Section 3.4.1 is sufficient to account for any

⁴⁶ However, Hudson (2000) claims that inheritance of contradictory inflectional information leads to the **amn't* gap in English – a Nixon diamond problem.

single inflectional class, but it still misses a major generalization: the fact that the same pattern of syncretism is found in all BCS inflection classes is treated as a coincidence. A default inheritance hierarchy allows us to capture this larger generalization.

The key information to capture is that the identity of form holds regardless of the individual form itself; it must therefore be represented in the hierarchy at a level higher than the level of the inflection class. This may be represented graphically as in Figure 7. Here, σ is a variable that stands for the stem.

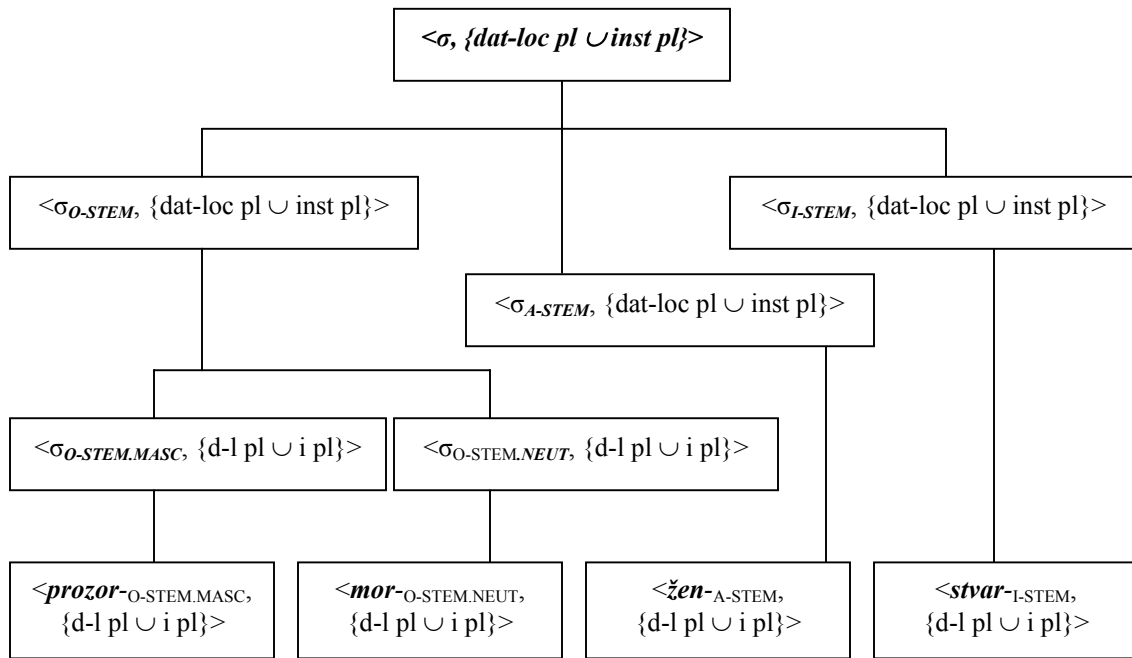


Figure 7: Syncretism in BCS nominal paradigms as a default-inheritance information-sharing network⁴⁷

⁴⁷ Note that this tree is highly simplified for the purpose of demonstration. Fully developed, the final nodes would be entire stem paradigms, not individual cells, and far more information would need to be represented on higher nodes to capture the entire pattern of inflection in BCS.

In the following section I explore how these formal structures – lexeme and stem paradigms, and information sharing networks – can be used to reframe the traditional WP notion of the paradigm as a set of implicational relationships.

3.5. A hypothesis regarding the role of the paradigm in defining and structuring rule competition

A fundamental insight of traditional WP approaches was that inflectional structure consists of implicational relations that hold between a word-form (or set of forms) and an inflection class (and thereby other word-forms), and that the abductive logic involved in identifying implicational relations is not always perfect – a single form may implicate more than one class. While much of recent WP research has focused on form-meaning mismatches, and therefore the indirect connection between morphosyntactic properties and morphophonological form, I hypothesize that our theory of inflection still needs to include implicational relations holding within the paradigm – whether that be at the level of the stem paradigm or the lexeme paradigm. My goal is to define a formal concept of *paradigm predictability* – the degree to which inflectional information associated with any given cell in the stem paradigm can be predicted from inflectional information associated with other cells – that is consistent with the more abstract definition of the paradigm typically employed by most modern WP approaches (see Section 3.3.2). I propose to use the inheritance hierarchy for this purpose.

One way to think of paradigm predictability is in terms of rule competition. Within the context of the paradigm, if a , the word-form realizing inflectional property set A, is fully predictive of b , the word-form realizing property set B, then the rule that

applies to generate *b* can be known absolutely in the context of *a*. But if *a* does not fully predict *b* (perhaps in one inflection class B is realized by *b*₁, and in another class by *b*₂, but both classes have *a*), there is analogical competition for which realization rule should apply to a stem paradigm cell containing B. However, this presupposes that an implicational relationship holds such that A is used to predict B. Of course, this need not be the case, even within analogical theories in which such relations constitute part of formal morphological structure (e.g., Albright and Hayes 2002, Bochner 1993, Skousen 1989). For example, it might be that the form realizing B is used to predict the form for A, but not the reverse. Or the two may operate independently. We therefore need a way to formally identify both the existence of an implicational relationship and any directionality in that relationship. The inheritance hierarchy provides the structure needed to do this.

Assume for a moment an overly simple inheritance tree structure, in which daughters have only one mother, we do not allow rules of referral to circumvent hierarchical structure, and daughter nodes cannot locally specify information that is contradictory to information that would be inherited. In such a structure, the information introduced at the highest nodes represents the information about inflectional form that is maximally general, shared by the widest range of inflection classes. For example, in the case of BCS, the syncretism between the dative-locative and instrumental plural cells is specified on the highest node in the hierarchy because this information is common to all inflection classes. Correspondingly, information that is introduced at the lowest nodes in the hierarchy is that which is most unique to a class. Since information is inherited by default, if overrides are not allowed, information monotonically increases in lower nodes.

Given this simplification, we can directly interpret the traditional notion of a principal part in terms of an inheritance hierarchy: at the node at which it is first introduced, a given inflectional generalization is predictive of all other inflectional generalizations also present at that node (i.e., all information initially specified at that node, or inherited from a higher node). This provides a formal definition of implicational relations – two inflectional generalizations A and B stand in an implicational relationship such that B predicts A if A is represented on the node at which B is introduced. If both A and B are introduced at the same node, they will be predictive of each other. Since there is more total information represented on lower nodes due to inheritance, inflectional information first introduced at low nodes will be predictive of the most information about the paradigm. In other words, information introduced at the lowest nodes serves the role of the principal part: the word-form that belongs uniquely to a single class and which is therefore a perfect predictor of all other members of the paradigm.⁴⁸

Note that while implicational relations traditionally were considered to hold more or less directly between two concrete word-forms belonging to the same lexeme, within the inheritance hierarchy, this defines implicational relations in a more abstract way. Importantly, the information represented on a node need not specify the entire exponence of a cell. For example, in Figure 7, the information indicates that the dative-locative and instrumental plurals are identical, but without any information about their exponents in a given inflection class. This is consistent with a definition of the paradigm based on the

⁴⁸ Actually, we should be able to quantify the degree to which any given piece of inflectional information associated with stem paradigm cell X is predictive (or predicted from) any other piece of inflectional information associated with a different cell in the paradigm. In other words, we should be able to define a principal part as a gradient concept, and attach probabilities accordingly. However, there is not space in this dissertation to follow this idea, and it will have to be left for future research.

combinatory possibilities of morphosyntactic property sets, rather than inflectional word-forms.

The simplified structure above defines a kind of ideal paradigm predictability. However, the interesting question is what happens when we include more mechanisms for inheritance, including inheritance by a single daughter from two mother nodes, or blocking of default inheritance. This is where the idea of rule competition (a.k.a. lack of paradigm predictability) comes into play. Consider the partial-tree schematic representation in Figure 8.

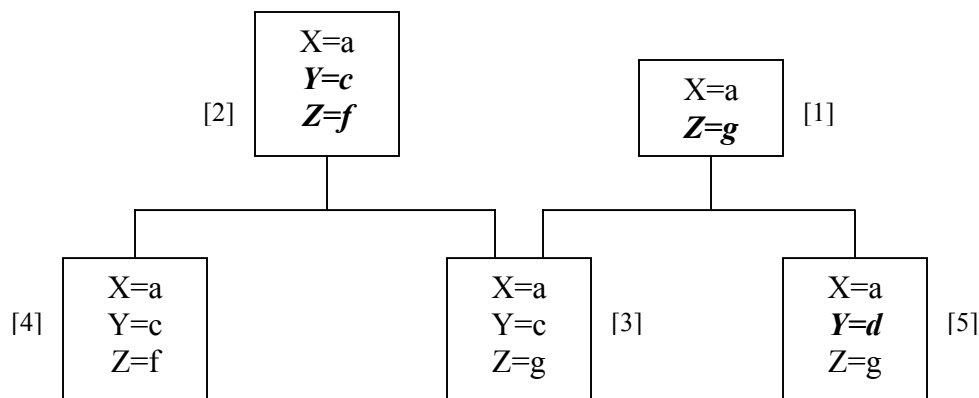


Figure 8: Inheritance from multiple mothers potentially leads to lack of paradigm predictability

Here, node [1] is the dominant mother for node [3], and node [3] accordingly inherits values for Z from node [1]. However, [1] does not specify values for Y, so [3] inherits ‘Y=c’ from node [2], which is the non-dominant mother. And [4] inherits values for both Y and Z from this node. The important thing to note is that within this structure, the information ‘Y=c’, cannot be used to predict the value of Z, even though values for both Y and Z are specified at node [2]. This is because the inheritance on [3] of ‘Z=f’ is

blocked by virtue of having another mother (node [1]), from which inheritance has higher priority. Also, if ‘Z=g’, this cannot be used to predict Y, because Y is not specified at the same node where Z is introduced (node [1]). This means that there is no implicational relationship from Z to Y. In short, within the stem paradigm represented by node [3], the information ‘Y=c’ neither predicts other inflectional information, nor is it predicted from it. It is natural to think of this as competition among inflectional rules that realize Y, based on (lack of) paradigmatic predictability.

Cells that are neither predicted by other cells nor predictive of them (in whole or in part) are effectively isolated within paradigmatic structure. I call these *paradigmatic weak points*. We can hypothesize that paradigm cells that are good predictors of other paradigmatic cells will have a fundamental, primitive status in the paradigm. (This is, after all, the premise behind the concept of a *principal part*). And paradigm cells that can be predicted from other cells are integrated within paradigmatic structure. However, if we take the idea of paradigmatic predictability seriously as the determinant of rule competition, the grammar does not always provide enough information to fully specify certain cells of the paradigm. And as hypothesized in the preceding discussion, these cells can be formally identified within a default information-sharing network of stem paradigms. We can thus use the inheritance hierarchy to define weak points in the paradigm.

In the following chapter I argue that it is exactly the paradigm cells in Greek nominal structure that are neither predictive nor predicted from information contained in the same node that are defective.

3.6. Summary

The paradigm has not always had a prominent role in morphological theory, particularly among early generative theories. However, beginning with Matthews (1972) and especially after Stump (2001b), it has been argued that theories that do not allow for connections among inflectionally related forms are empirically inadequate; the most important evidence has involved form-meaning mismatches (e.g., syncretism). This has led to a resurgence of paradigmatically-based theories of inflection.

Much of recent research in modern Word and Paradigm (WP) frameworks has focused on capturing the indirect relationship between morphosyntactic properties and morphophonological form. The newest proposal for this is paradigm linkage (Stump 2006), which posits that inflectional structure is instantiated by paradigms at two distinct levels – the stem paradigm, which represents the level of inflectional form, and the lexeme paradigm, which represents the level of morphosyntactic properties. Default inheritance hierarchies, a kind of static information sharing network, are another major feature of many modern WP models; they have been proposed as a way to capture the relative distance between stem paradigms (a.k.a. inflection classes) (Hippisley et al. 2004). Less attention has been given to the implicational relations that constitute the internal structure of the paradigm, which formed the core of paradigmatic structure in pre-generative (WP) morphology.

At the end of the chapter I hypothesized that the traditional notion of principal parts, and more generally the idea of implicational relations within the paradigm, are still needed within modern WP approaches. I suggest that inheritance hierarchies can be used to formalize an updated version of paradigm predictability, based on where inflectional

information is first specified within the hierarchy. Most important here is that if we allow inheritance from multiple mothers, overrides of default inheritance, and similar measures, it is possible for structures to arise in which a given piece of inflectional information is not predictive of, nor predicted by, other information within the paradigm. In the following chapter I flesh out this hypothesis with a concrete examples, and argue that this sort of weak point in the paradigm is connected to the existence of genitive plural gaps among Greek nouns.

CHAPTER 4

THE PARADIGMATIC STRUCTURE OF MODERN GREEK GENITIVE PLURAL GAPS

In this chapter I argue that the distribution of paradigmatic gaps in the genitive plural in Modern Greek cannot be understood without reference to rules of stress placement among Modern Greek nouns, and that those rules of stress placement must be considered fundamentally paradigmatic. Modern Greek thus provides evidence that paradigmatic gaps are dependent upon paradigmatic structure.

The Modern Greek nominal system has four cases: nominative, accusative, genitive, and vocative, but among these the genitive plural is different from other cells in the paradigm for at least three reasons. First, there are gaps in the genitive plural.⁴⁹ Second, although the normal, synthetic genitive form is possible in a wide variety of uses, a periphrastic prepositional phrase containing an accusative noun phrase is often preferred. This is true for both singular and plural genitives. Third, the stress of the genitive plural is governed by a separate generalization than is stress in (most) other inflected forms.

I show that these three facts are connected. Evidence comes from the distribution of the genitive plural gaps among Greek nominal inflection classes and a forced choice

⁴⁹ There are also pluralia tantum and singulare tantum nouns. These are (primarily) semantically motivated, and thus not of concern for the present study. There are also diminutive nouns (ending in *-aki* / *-aki*) that have gaps in the genitive singular. It is unclear why these gaps exist, but they do not appear to be connected to the genitive plural gaps since the latter do not occur in diminutive nouns of this type.

sentence-completion survey of preference for periphrastic or synthetic forms among non-defective nouns. To jump ahead to the conclusions, the genitive plural gaps in Modern Greek are closely connected to shifting stress in the genitive plural, and I argue that the predictability of stress placement (historically) lies at the heart of the Greek genitive plural gaps.⁵⁰

To set the stage for the relevant data and formal analysis, I first give an overview of nominal genitive plural stress in Section 4.1. After presenting evidence of the connection between stress placement and defectiveness in Sections 4.2 and 4.3, in Section 4.4 I use a default inheritance hierarchy to formalize an analysis of the genitive plural gaps based on the (lack of) paradigm predictability of the genitive plural forms of affected lexemes.

4.1. Overview of genitive plural stress

Stress placement in the Modern Greek genitive plural is best described as a series of idiosyncratic generalizations left as residue of other changes from Ancient Greek to the present. Ancient Greek had a pitch accent system. The primary (high) pitch accent was constrained so as to fall within the last three syllables of a prosodic word, or better, the last three moras.⁵¹ The genitive plural marker [-ōn] was bimoraic, whereas many other inflectional markers were monomoraic. This difference meant that the genitive plural showed an accent shift relative to other inflected forms in those lexemes for which accent

⁵⁰ In CHAPTER 5 I argue that stress placement and inflectional defectiveness are less closely connected synchronically than they appear to have been historically. It is unclear whether stress predictability *synchronically* motivates defectiveness. We thus need to strongly distinguish between synchronic and historical explanations for gaps.

⁵¹ Describing accent placement in terms of moras, as opposed to syllables, allows for a better account of what happens with finite verb forms, but it requires the assumption that a non-final long vowel counts as monomoraic.

was generally antepenultimate (giving, for example, nsg $\acute{\mu}\mu\text{-}\mu$, gpl $\mu\acute{\mu}\text{-}\mu\mu$). However, with the loss of distinctive length in post-Classical Greek, stress placement (the language by then having shifted from a pitch accent system to a stress accent system) was reanalyzed as being syllable-based, so that the accent fell within the last three syllables. As a result, there was no longer a phonological motivation for the difference in stress placement between the genitive plural and other inflected forms of the same lexeme, since all the endings were equally monosyllabic. The stress shift in the genitive plural thus became an idiosyncratic fact about that inflectional form. Borrowings, stress levellings, the collapse of some inflectional classes, and other historical developments have further diminished the possibility of making motivated generalizations about stress placement in the genitive plural form. And the previously diglossic situation in Modern Greek (until the 1970's), in which stress patterns more faithful to the accentual placement of Ancient Greek were given prominence, possibly impeded any widespread leveling of the stress pattern.

The dictionary of the Triantafillidis Institute, *Lexiko tis koinis neoellinikis* (1998), identifies 69 inflection classes for Modern Greek nouns, not including singleton classes or indeclinable nouns. If we group these classes according to shared segmental material (collapsing differences of gender and stress placement), the number of classes is reduced to 23. These inflectional classes in turn represent three descriptive types, according to the stress pattern of the genitive plural form relative to other inflected forms.⁵²

One group, which I will call “type 1”, consists of noun classes which always have columnar stress, including in the genitive plural. Different lexemes may have stress on

⁵² Neither traditional Greek grammatical descriptions nor theoretical studies of Greek stress use this grouping into three types. However, these three types are meant purely as a descriptive tool. In the theoretical discussion in Section 4.4.1 I argue for a somewhat different organization into inflectional classes. However, here it is easiest to begin with a more traditional classification, for descriptive purposes.

different syllables (either final, penultimate, or antepenultimate), but for any given lexeme, it is consistent for all inflected word-forms. An example of each of the non-singleton type 1 inflection classes is given in Table 14.

‘greengrocer’	SINGULAR	PLURAL
NOM	μανάβης manávis	μανάβηδες manávides
ACC	μανάβη manávi	μανάβηδες manávides
GEN	μανάβη manávi	μανάβηδων manávidon

‘coffee’	SINGULAR	PLURAL
NOM	καφές kafès	καφέδες kafédes
ACC	καφέ kafé	καφέδες kafédes
GEN	καφέ kafé	καφέδων kafédon

‘countess’	SINGULAR	PLURAL
NOM	κόντες kó(n)des	κόντηδες kó(n)dides
ACC	κόντε kó(n)de	κόντηδες kó(n)dides
GEN	κόντε kó(n)de	κόντηδων kó(n)didon

‘grandfather’	SINGULAR	PLURAL
NOM	παππούς pappús	παππούδες pappúdes
ACC	παππού pappú	παππούδες pappúdes
GEN	παππού pappú	παππούδων pappúdon

‘mother’	SINGULAR	PLURAL
NOM	μαμά mamá	μαμάδες mamádes
ACC	μαμά mamá	μαμάδες mamádes
GEN	μαμάς mamás	μαμάδων mamádon

‘fox’	SINGULAR	PLURAL
NOM	αλεπού alepú	αλεπούδες alepúdes
ACC	αλεπού alepú	αλεπούδες alepúdes
GEN	αλεπούς alepús	αλεπούδων alepúdon

‘relative’	SINGULAR	PLURAL
NOM	συγγενής si(n)genís	συγγενείς si(n)genís
ACC	συγγενή si(n)gení	συγγενείς si(n)genís
GEN	συγγενή si(n)gení	συγγενών si(n)genón

‘corporal’	SINGULAR	PLURAL
NOM	δεκανέας ðekanéas	δεκανείς ðekanís
ACC	δεκανέα ðekanéa	δεκανείς ðekanís
GEN	δεκανέα ðekanéa	δεκανέων ðekanéon

‘circum- navigation’	SINGULAR	PLURAL
NOM	περίπλους períplu	περίπλοι perípli
ACC	περίπλου períplu	περίπλους períplu
GEN	περίπλου períplu	περίπλων períplon

Table 14: Greek noun inflection classes with genitive plural stress consistently columnar (type 1)

In “type 2” nouns, genitive plural stress is fixed relative to the end of the word. For some inflectional classes, genitive plural stress is fixed on the final syllable. For others, it is fixed on the penultimate syllable. The result in both cases is that stress is not necessarily on the same syllable in the genitive plural as in the other inflected forms, for which stress is (usually) a lexical property of the stem (Revithiadou 1998). Sometimes the genitive singular is involved in the stress shift as well. For example, with regard to the paradigm represented by *αγόρι* / *αγόρι* ‘boy’, Holton et al. (1997:65) notes that “these nouns are always paroxytone... In their genitive singular and plural they move the stress to the final syllable, with the -ι- losing its syllabic value...” In type 2 noun classes, speakers who know the stress pattern that is general to the noun class should be able to predict the stress of the genitive plural (and genitive singular) when presented with a new word of this class.

‘victory’	SINGULAR	PLURAL
NOM	νίκη níki	νίκες níkes
ACC	νίκη níki	νίκες níkes
GEN	νίκης níkis	νικόν nikón

‘boy’	SINGULAR	PLURAL
NOM	αγόρι agóri	αγόρια agórja
ACC	αγόρι agóri	αγόρια agórja
GEN	αγοριού agorjú	αγοριών agorjón

‘part’	SINGULAR	PLURAL
NOM	μέρος méros	μέρη méri
ACC	μέρος méros	μέρη méri
GEN	μέρους mérous	μερών merón

‘sailor’	SINGULAR	PLURAL
NOM	ναύτης náftis	ναύτες náftes
ACC	ναύτη náfti	ναύτες náftes
GEN	ναύτη náfti	ναυτών naftón

‘apprentice’	SINGULAR	PLURAL
NOM	κάλφας kálfas	καλφάδες kalfádes
ACC	κάλφα kálfas	καλφάδες kalfádes
GEN	κάλφα kálfas	καλφάδων kalfádon

‘(mental) power’	SINGULAR	PLURAL
NOM	δύναμη dínamí	δυνάμεις dínamis
ACC	δύναμη dínamí	δυνάμεις dínamis
GEN	δύναμης dínamis	δυνάμεων dínameon

‘continent’	SINGULAR	PLURAL
NOM	ήπειρος ípiros	ήπειροι ípiri
ACC	ήπειρο ípiro	ηπείρους ipírus
GEN	ηπείρου ipíru	ηπείρων ipíron

‘name’	SINGULAR	PLURAL
NOM	όνομα ónoma	ονόματα onómata
ACC	όνομα ónoma	ονόματα onómata
GEN	ονόματος onómatos	ονομάτων onomáton

‘meat’	SINGULAR	PLURAL
NOM	κρέας kréas	κρέατα kréata
ACC	κρέας kréas	κρέατα kréata
GEN	κρέατος kréatos	κρεάτων kreáton

‘prospects’	SINGULAR	PLURAL
NOM	μέλλον méllon	μέλλοντα méllonta
ACC	μέλλον méllon	μέλλοντα méllonta
GEN	μέλλοντος méllontos	μελλόντων mellónton

Table 15: Greek noun inflection classes with genitive plural stress consistently fixed relative to the end of the word (type 2)

The third type includes words for which there is variation within the inflection class itself. In classes of this type, genitive plural stress placement is not uniformly fixed relative to the end of the word. Nor is stress placement necessarily columnar, although lexemes may “accidentally” have columnar stress if the rule of genitive plural stress placement and the rule(s) governing stress in the other inflected forms independently designate the same syllable. As a result, stress placement cannot be securely predicted without historical knowledge. Holton et al. (1997:48-49) provide the following description of one class of this type – nouns in which the nominative singular is marked by stem + /as/.

There are two types [of mobile stress patterns], according to the stress of the genitive plural: (i) those that have a genitive plural with stress on the penultimate (mostly nouns deriving from the Ancient Greek 3rd declension); (ii) those that have a genitive plural with stress on the final syllable (nouns deriving from the Ancient Greek 1st declension, but also including some from the 3rd declension and some newer formations). With these exceptions, the stress remains on the same syllable as in the nominative singular.

Two examples of each inflection class of this type are given below – one example with shifting stress, and one without – starting with the class described by Holton et al.

WITHOUT STRESS SHIFT		
‘father’	SINGULAR	PLURAL
NOM	πατέρας patéras	πατέρες patéres
ACC	πατέρα patéra	πατέρες patéres
GEN	πατέρα patéra	πατέρων patéron

WITH STRESS SHIFT		
‘tourist’	SINGULAR	PLURAL
NOM	τουρίστας turístas	τουρίστες turístes
ACC	τουρίστα turísta	τουρίστες turístes
GEN	τουρίστα turísta	τουριστών turistón

WITHOUT STRESS SHIFT		
‘echo’	SINGULAR	PLURAL
NOM	αντίλαλος antílalos	αντίλαλοι antílali
ACC	αντίλαλο antílalo	αντίλαλους antílalus
GEN	αντίλαλου antílalú	αντίλαλων antílalón

WITH STRESS SHIFT		
‘angel’	SINGULAR	PLURAL
NOM	άγγελος á(n)gelos	άγγελοι á(n)geli
ACC	άγγελο á(n)gelo	αγγέλους a(n)gélus
GEN	αγγέλου a(n)gélú	αγγέλων a(n)gélón

WITHOUT STRESS SHIFT		
‘mother’	SINGULAR	PLURAL
NOM	μητέρα mitéra	μητέρες mitéres
ACC	μητέρα mitéra	μητέρες mitéres
GEN	μητέρας mitéras	μητέρων mitéron

WITH STRESS SHIFT		
‘hour’	SINGULAR	PLURAL
NOM	ώρα óra	ώρες óres
ACC	ώρα óra	ώρες óres
GEN	ώρας óras	ωρών orón

WITHOUT STRESS SHIFT		
‘iron’	SINGULAR	PLURAL
NOM	σίδερο síðero	σίδερα síðera
ACC	σίδερο síðero	σίδερα síðera
GEN	σίδερου síðeru	σίδερων síðeron

WITH STRESS SHIFT		
‘face’	SINGULAR	PLURAL
NOM	πρόσωπο prósopo	πρόσωπα prósopa
ACC	πρόσωπο prósopo	πρόσωπα prósopa
GEN	προσώπου prosópu	προσώπων prosópon

Table 16: Greek noun inflection classes with variability in genitive plural stress placement (type 3)

As has been noted previously (Revithiadou 1998, Touratzidis and Ralli 1992), the data entail that stress placement in the genitive plural is sometimes governed by the same

generalization as the stress in other inflected forms (i.e. for type 1), and sometimes by a separate generalization (i.e. for types 2 and 3). Moreover, for type 3, genitive plural stress must be lexically specified, due to variation within the class. Any theory which adequately describes the facts would seem to need to come to these conclusions, although the formalism and details of the relevant generalizations may vary.

Given that genitive plural stress has this kind of special status in the Greek inflectional system, it is the most obvious suspect as a potential cause of Greek genitive plural gaps. In the following sections I explore the relationship between stress and defectiveness, starting with distributional information.

4.2. The distribution of genitive plural gaps

Although descriptive Modern Greek grammars often note paradigmatic gaps in the genitive plural of nouns (e.g., Holton et al. 1997), to my knowledge nobody has previously made a systematic study of their distribution or possible causes. Using two major Modern Greek dictionaries, *Lexiko tis neas ellinikis glossas* (Babiniotis 1998, henceforth LNEG) and the online version of *Lexiko tis koinis neoellinikis* (1998, henceforth LKN),⁵³ I identified 2,141 distinct Modern Greek nouns that are marked as having a genitive plural gap by at least one of the dictionaries. A complete list of these nouns is given in APPENDIX A.⁵⁴

⁵³ <http://www.komvos.edu.gr/dictionaries/dictadv/DictAdvSea.htm>

⁵⁴ There was surprisingly little agreement between the two dictionaries about which lexemes are defective in the genitive plural. Fewer than one fourth (N = 470) of the total number of defective lexemes are marked as defective in both dictionaries. An additional 212 words are marked in the LKN as having genitive plural gaps, while the LNEG marks them as having gaps in the entire plural. There are two examples of the reverse. There are also five nouns which the LKN marks as having genitive plural gaps, and LNEG marks as having gaps in the entire genitive, and no examples of the reverse. Thus, there are a total of 689 nouns which both dictionaries agree have gaps minimally in the genitive plural. Of the remaining 1,452 nouns, 579 genitive plural gaps are unique to the LNEG dictionary, either because the

These gaps represent a surprisingly large portion of all Greek nouns. The LKN contains approximately 27,600 lexical entries for nouns, and 1,560 of these entries are marked as having gaps in the genitive plural. This means that about 5.6% of all nouns in the language have gaps in the genitive plural, and this number excludes gaps that are in the entirety of the genitive (usually the lexeme is semantically incompatible with the genitive), or the entirety of the plural (singularia tantum nouns), or for which the genitive plural is marked as being “rare” but not a gap.⁵⁵ To provide some sense of comparison, consider that the Russian first person singular verbal gaps (e.g. **(ja) pobežu* ‘(I) win’) are one of the most famous cases of inflectional defectiveness. Halle (1973) claims that there are about 100 gaps in this cell, and these represent only about 60 distinct stems (see APPENDIX D). In other known cases, paradigmatic gaps exist in at most a few dozen lexemes. The Modern Greek genitive plural gaps thus seem to be unusual in being so numerous.

Of the 1,560 genitive plural gaps cited by the LKN (1998), 88.5% occur among nouns of stress type 3. Excluding indeclinable nouns and singleton classes, only 58% of all Greek nouns belong to the same inflection classes. Defective lexemes are thus overrepresented ($\chi^2=596.2$, $p<0.001$), suggesting that the variability in genitive plural stress placement in type 3 classes is connected to the appearance of gaps.

LKN did not have an entry for the lexical item, or more commonly because it does not mark the noun as having a gap of any type, and 873 gaps are unique to the LKN for the same reasons. For the present work, I assume that lexemes are defective if they are marked in either dictionary as defective.

⁵⁵ Similar figures are not available for the LNEG, but I have no reason to believe that the results would be substantially different.

	Noun classes with columnar stress (type 1)		Noun classes with fixed gen.pl stress (type 2)		Noun classes with non-columnar, non-fixed gen.pl stress (type 3)	
	%	N	%	N	%	N
nouns with gpl gaps	0%	0	11.5%	180	88.5%	1,380
all nouns	2.9%	790	38.8%	10,588	58.3%	15,883

Table 17: Distribution of nouns with genitive plural gaps vs. all nouns, according to stress type (data from the online version of the *Lexiko tis koinis neoellinikis* (1998))⁵⁶

But from this data it is unclear whether the issue is stress placement per se, or stress shift. The term “stress shift” implicitly compares multiple inflectional forms, and is thus paradigmatic. But if the relevant issue is solely that the genitive plural is subject to a different rule of stress placement than are other inflected forms, the distribution of paradigmatic gaps within an inflection class should show no effect for whether a given word has stress on the same syllable in the genitive plural and other cells. (Remember that for type 3 nouns, when genitive plural stress coincides with stress in other inflected forms, this is “accidentally” columnar because genitive plural stress and stress in other cells are governed by separate generalizations). By contrast, if gaps are tied to whether stress in the genitive plural is (potentially) shifted relative to other forms, paradigmatic gaps should occur primarily in lexemes for which the nominative singular and genitive plural could have stress on different syllables.

⁵⁶ This table assumes that the class represented by *víkη* / *níki* ‘victory’ in Table 16 is classified as type 2. According to traditional inflection class distinctions (in which the word-final [-i] is analyzed as an inflectional marker), this is the correct analysis. However, in Section 4.4 I reanalyze the final vowel as part of the stem. Since there are other classes with the same formatives if [-i] is part of the stem, and this is the only ‘type 2’ class with a large number of defective lexemes, there is good motivation for the reanalysis. This has the effect of merging the *víkη* class into the type 3 nouns. Thus, under the reanalysis, only 11 type 2 lexemes would have genitive plural gaps (all in the class represented by *μέρος* / *méros* ‘part’), whereas 1,549 type 3 lexemes would be defective.

The most course-grained but also easiest way to distinguish the words which necessarily have the same stress in all forms from those which could have stress on a different syllable in the genitive plural is to divide them according to whether the nouns have final or non-final stress in the nominative singular. Stress in Greek nouns is virtually never on an earlier syllable in the genitive plural than in the other inflected noun forms. Thus, words with final stress in the nominative singular necessarily have stress on the final syllable in all inflected forms, including the genitive plural. Words with non-final stress in the nominative singular potentially have a shift in the genitive plural towards the end of the word.

When we divide the type 3 nouns in this way, we find that genitive plural gaps appear exclusively in nouns with non-final stress in the nominative singular. 82.4% of all nouns in the same classes have non-final stress. Again, gaps are overrepresented ($\chi^2=300.4$, $p<0.001$).

	final stress (always “accidentally” columnar)		non-final stress (potentially subject to gpl stress shift)	
	%	N	%	N
nouns with gpl gaps	0%	0	100%	1,380
all nouns	17.6%	2,801	82.4%	13,082

Table 18: Distribution of type 3 nouns with genitive plural gaps vs. all type 3 nouns, according to whether the (expected) form could have a stress shift (data from the online version of the *Lexiko tis koinis neoellinikis* (1998))

The data in Table 18 thus indicate that generalizations about Greek genitive plural gaps should be made at the level of the paradigm. Trying to explain the appearance of genitive plural gaps with reference only to the genitive plural cell fails to explain why they occur

only in lexemes with non-final stress in the non-genitive-plural cells. In short, the distributional data suggest that the important issue is the *predictability* of stress placement based on other cells in the paradigm. Type 3 nouns with non-final nominative singular stress have the least predictable genitive plural stress because they may or may not have a stress shift in that cell.

Finally, we can identify one more important distributional fact: gaps are not evenly distributed among type 3 classes, even when final vs. non-final stress is taken into account. For example, as listed in LKN (1998), the inflection class represented by *μητέρα* / *mitéra* ‘mother’ and *ώρα* / *óra* ‘hour’ (see Table 16) contains 1,380 genitive plural gaps; this means that 17.2% of all nouns in this class are defective. By contrast, the inflection class represented by *σίδερο* / *síðero*, and *πρόσωπο* / *prósopo* also belongs to stress type 3, but it contains only twenty-four gaps (0.46% of all lexemes in this class are defective). And the class represented by *αντίλαλος* / *antílalos* and *άγγελος* / *á(n)gelos* has no gaps at all. A satisfactory analysis should be able to explain this distribution. Given the preceding discussion, a natural question is whether all type 3 noun classes have equally (un)predictable genitive plural stress. I return to this issue when I present my formal analysis of lexical structure in Section 4.4.2. (There I argue that despite outward similarities, in some type 3 classes the genitive plural cell is less well integrated into paradigmatic structure, and thus its form is less predictable. Gaps are overrepresented in these classes.)

4.3. Avoidance strategies in the genitive plural

The distributional evidence is suggestive, but better evidence of the connection between stress patterns and defectiveness comes from variation between synthetic and periphrastic forms. We can hypothesize that paradigmatic gaps represent only one extreme end result of speakers' reactions to morphological uncertainty (Albright 2003). Thus, if speakers find genitive plural stress unpredictable (and thus somehow problematic), I would expect this to be reflected in speakers' reactions to lexemes with productive genitive plurals as well, and not only those that are defective. Greek has ideal conditions to test this hypothesis.

As alluded to at the beginning of the chapter, in Modern Greek periphrastic constructions are often used in variation with synthetic genitive (plural) forms. The periphrastic constructions consist of prepositional phrases containing accusative nouns – which do not generally have a stress shift.⁵⁷ Examples are given in (18) through (20).

- (18) a. To έδωσε της Κατερίνας
To éxose tis Katerínas
It gave the-GEN.SG Catherine-GEN.SG
'(S)he gave it to Catherine.'
- b. To έδωσε στη Κατερίνα
To éxose sti Katerína
It gave to-the-ACC.SG Catherine-ACC.SG
'(S)he gave it to Catherine.'

⁵⁷ Variation between a genitive NP and a bare accusative NP also exists in Modern Greek, as the following examples show. However, periphrasis is far more common and is the concern of this dissertation.

- | | | | |
|----|--|----|--|
| a. | μια σειρά πηδημάτων
mia seirá pīdimáton
a series leaps.GEN.PL
'a series of leaps' | b. | μια σειρά πηδήματα
mia seirá pīdimata
a series leaps.ACC.PL
'a series of leaps' |
|----|--|----|--|

- (19) a. μια μεγάλη μερίδα του λαού
mia megáli merída tu laú
a large portion the-GEN.SG people-GEN.SG
‘a large portion of the people’
- b. μια μεγάλη μερίδα από τον λαό
mia megáli merída apó ton laó
a large portion from the-ACC.SG people-ACC.SG
‘a large portion of the people’
- (20) a. Ο Παύλος είναι συνομήλικος του Δημήτρη
O Paúlos éinai sinomílikos tu Dímitri
the Paul is same-age the-GEN.SG Demetra-GEN.SG
‘Paul is the same age as Dimitra’
- b. Ο Παύλος είναι συνομήλικος με τη Δήμητρα
O Paúlos éinai sinomílikos me ti Dímitra
the Paul is same-age with the-ACC.SG Demetra-ACC.SG
‘Paul is the same age as Demetra’

In this section I present a study of speakers’ preference for synthetic versus periphrastic constructions according to stress type (and frequency). If the variability of the genitive plural stress shift causes speaker insecurity, we would expect to find increased preference for periphrastic constructions for words with stress type 3, but not for words of types 1 and 2 – a sign of avoidance strategies.

4.3.1. Factors influencing use of periphrastic constructions

Based on grammatical descriptions of genitive usage and the discussion in the previous sections, several factors may be relevant to whether speakers use a synthetic genitive plural form or a periphrastic prepositional phrase (Holton et al. 1997, Jannaris 1987, Joseph and Philippaki-Warbuton 1987, Thumb 1964[1912]).

First, genitive – prepositional phrase variation is tied to formality. Prepositions such as *από/από* ‘from’ are “...often used as a colloquial alternative to the genitive, particularly the possessive genitive, the genitive of type, the genitive of content, or the partitive genitive...” (Holton et al. 1997:383). The register difference is closely connected to the diglossic linguistic situation that Greek maintained until the 1970’s. The high style, *katharevousa*, represented an archaized version of the modern language. The low style, *dhimotiki*, represented everyday language. While *dhimotiki* was raised to the status of the official language in 1976, features of *katharevousa* have seeped into formal registers of Greek. Where the genitive and a prepositional phrase are functional equivalents in the modern language, synthetic genitive use is often associated with *katharevousa* and formal registers, periphrasis with *dhimotiki* and colloquial registers.

Second, different semantic functions are amenable to periphrasis to different degrees. As seen in (18) above, either a prepositional phrase or a genitive noun phrase is possible to express the indirect object relation. Similar situations exist for partitives (19), comparison (20), and a host of other functions. But Greek speakers typically (strongly) prefer the (b) form in (18), with the periphrasis, to the (a) form, but prefer the (a) form in (19), with the synthetic genitive form, to the (b) equivalent.

Furthermore, at the extremes only one form or the other may be possible. Grammars and Greek informants claim that prepositional phrases cannot substitute for animate possessive genitives (see (21)), genitives governed by verbs,⁵⁸ any genitive weak personal pronoun, etc. Likewise, synthetic genitive forms cannot substitute for prepositional phrases in the locative function.

⁵⁸ Brian Joseph (p.c.) points out that verbs which subcategorize for genitive tend to be *katharevousa* forms, and that a prepositional phrase would therefore produce a register clash.

- (21) a. το σπίτι της Λουκίας
to spíti tis Lukías
the house the-GEN.SG Lucy-GEN.SG
‘Lucy’s house’
- b. *το σπίτι από την Λουκία
*to spíti apó tin Lukía
the house from the-ACC.SG Lucy-ACC.SG
*‘Lucy’s house’

These are only a few examples of the complex relationship between synthetic and periphrastic forms that are created by semantic issues. The basic pattern seems to be that the more prototypical the connection between a form and a particular function, the less likely it is to allow both the periphrastic and synthetic forms. Thus, animate possessors cannot be marked periphrastically. Directional and locational functions cannot be marked with the synthetic genitive form. Most functions, however, lie in the murky middle ground – inanimate possessors, relations between containers and contents, partitives, purposives, etc. These allow, to one degree or another, both synthetic and periphrastic expression.

Third, based on the variability in stress placement across and within inflection classes, and the strong correlation between gaps and those word forms which are eligible for a stress shift, I would expect stress to be one of the factors which mediates this middle ground. The more variable the stress pattern within the inflection class, the more the periphrastic construction, which avoids the issue of stress placement, may be preferred. This is the primary question of the present study.

To these issues we may add frequency. There are large literatures on frequency effects in morphological processing, lexical storage, and morphological change (Alegre and Gordon 1998, Baayen 1993, Bertram et al. 2000, Butterworth 1983, the papers in Bybee and Hopper 2001, Caramazza et al. 1988, Hay 2003, Hooper 1976, Phillips 2001, Schreuder and Baayen 1995, and Stemberger and MacWhinney 1986 are just a few of the influential works). It would be impossible here to do justice to previous work in this area, and I have nothing new to suggest about the subtleties of frequency effects.

However, acknowledging that frequency has a pervasive influence, I would expect to find its effects even in crude measures such as corpus counts of lemma frequency.

Specifically, if generating a genitive plural form is somehow problematic, we might expect greater use of periphrasis among low frequency lemmas, since these must be generated “on the fly”. Much psycholinguistic evidence indicates that high frequency word-forms are stored fully inflected in the lexicon and accessed directly, rather than being generated each time they are used.

4.3.2. Predictions

To review, I have identified four primary factors that may impact genitive/prepositional phrase variation in Modern Greek – register, function, stress, and frequency. Register, function, and frequency are relevant for both the genitive singular and the genitive plural, while stress relates primarily to the genitive plural. Focusing on stress and frequency, I set forth three hypotheses regarding genitive plural usage in Modern Greek:

- For words with type 3 stress, the prepositional phrase will be preferred, more so than for words with stress types 1 or 2. (competing stress patterns → genitive plural avoidance).
- For infrequent lexemes, the prepositional phrase will be preferred, more so than for frequent lexemes (infrequent → genitive plural avoidance).
- High competition and low frequency will interact to have an additive effect, increasing the likelihood of genitive plural avoidance.

As outlined above, I also expect the use of genitive vs. prepositional phrase to vary according to the function of the genitive and according to register. However, these issues are set aside for this experiment. Both function and register are controlled for in the following data in order to remove their influence from the analysis, to the extent possible.

The logic behind these predictions is that where a morphophonological alternation occurs within a paradigm, there is motivation for avoidance of the alternation. That motivation should increase as the predictability of the alternation decreases. In the case of Modern Greek, a periphrastic prepositional phrase containing an accusative plural noun phrase is an independently existing alternative to the genitive plural, so avoidance of the genitive plural is easily accomplished if desired. Moreover, while this study does not measure the causes of gaps directly, if speakers prefer periphrastic constructions in exactly the classes where gaps are found, it is reasonable to infer that gaps are the end result of avoidance of the synthetic form.

4.3.3. Methodology

I tested these hypotheses through a forced choice task in which subjects completed Greek sentences by choosing among four possible answers: two genitive noun phrases (one with normative stress and one without) and two prepositional phrases (one with normative stress on an accusative noun and one without).

4.3.3.1. Target words

To compose this task, I mined a sample of Modern Greek nouns from the on-line version of the LKN.⁵⁹ All inflectional classes were represented among the 2,561 lexemes. I then sorted these words according to the three categories described above: stress type 1 (798 words), stress type 2 (742 words), and stress type 3 (1,021 words).

Words were sorted into two levels of frequency – frequent and infrequent – based on a combination of lemma frequency in the Hellenic National Corpus (HNC),⁶⁰ and the judgments of selected words from one adult native Greek speaker from Athens. This native speaker rated the nouns on a 7-point Likert scale according to his familiarity with the words and the frequency with which he uses them. Words which were both within the top 50 most frequent lemmas for that stress type according to the corpus count and which received a rating of 7 (“I use this word frequently”) are considered, for the purpose of this study, “frequent”. Words which had a lemma frequency between 3 and 15 tokens per million according to the corpus count and which received a rating of 5 (“This word is familiar, but I use it only rarely”) are considered, for the purpose of this study,

⁵⁹ <http://kastor.komvos.edu.gr/dictionaries/dictadv/DictAdvTri.htm>

⁶⁰ The Hellenic National Corpus is a 32+ million-word corpus of written Modern Greek which was created by the Institute for Language and Speech Processing in Greece. The frequency produced by the corpus is assumed to be representative of the each noun's frequency in written texts. <http://hnc.ilsp.gr/statistics.asp>

“infrequent”. Only words meeting both the Likert and HNC criteria were used in the study. The result is a binary opposition between frequent and infrequent words, with words of intermediate frequency discarded.

I further filtered candidate words according to the frequency of the genitive plural form relative to the rest of the word, as represented in the Hellenic National Corpus. I eliminated words in which the genitive plural represented less than 2% or more than 25% of total lemma attestations so as to ensure that idiosyncrasies of particular words did not become an undue factor in the analysis and that the genitive plural is an attested form, and thus a possible response.

Finally, all selected target words had non-final stress.

4.3.3.2. Questionnaire composition

With the help of a native Greek speaker, I created thirty-six examples by factorial design, permuting three factors: 6 levels of genitive function x 3 levels of stress type x 2 levels of frequency = 36. In the analysis, the data is collapsed across functions, leaving six examples of each of six stress-frequency conditions.

Each example consisted of a sentential frame with the target noun phrase removed. Each sentential frame was different, and aimed to create realistic sentences of the Greek language, such as might be found in a newspaper or other general-audience literature. In each case, the frame could be completed grammatically by either a synthetic genitive plural noun phrase, or a prepositional phrase. An additional eighteen examples were fillers. These eighteen mostly represent functions that in the history of the language

were realized with the synthetic genitive, but that use is obsolete in Modern Greek, with a prepositional phrase being the only “natural” choice.

The six functions were abstract object, content, partitive, inanimate possession, prepositional, and purpose. An example of each function is given below. I chose these functions because they represent a wide variety of semantics, and because they occur robustly both in the genitive and in the periphrastic form. See APPENDIX B for all of the questionnaire materials.

(22) abstract object

- a. η λύση των προβλημάτων του
i lísi ton provlimáton tu
the solution the-GEN.PL problems-GEN.PL his
‘the solution to his problems’
- b. η λύση στα προβλήματα του
i lísi sta provlimáta tu
the solution to-the-ACC.PL problem-ACC.PL his
‘the solution to his problems’

(23) content

- a. μια παρέα εννέα γυναικών
mia paréa ennéa yinekón
a group nine women-GEN.PL
‘a group of nine women’
- b. μια παρέα με εννέα γυναίκες
mia paréa me ennéa yinékes
a group with nine women-ACC.PL
‘a group with nine women in it’

(24) partitive

- a. μεγάλος αριθμός των μηχανών
 meγálos ariθmós ton mixanón
 large number the-GEN.PL machines-GEN.PL
 ‘a large number of the machines’
- b. μεγάλος αριθμός από τις μηχανές
 meγálos ariθmós apó tis mixanés
 large number from the-ACC.PL machines-ACC.PL
 ‘a large number of the machines’

(25) inanimate possession

- a. τα κλαριά των δέντρων
 ta klarjá ton déndron
 the branches the-GEN.PL trees-GEN.PL
 ‘the trees’ branches’
- b. τα κλαριά από τα δέντρα
 ta klarjá apó ta déndra
 the branches from the-ACC.PL trees-ACC.PL
 ‘the trees’ branches’

(26) prepositional

- a. ένα λόγο εναντίον των απεργιών
 éna lógo enandíon ton apergíon
 a speech against the-GEN.PL strikes-GEN.PL
 ‘a speech against the strikes’
- b. ένα λόγο ενάντια στις απεργίες
 éna lógo enándia stis apergíes
 a speech against to-the-ACC.PL strikes-ACC.PL
 ‘a speech against the strikes’

(27) purpose

- a. ένα ποτήρι του κρασιού
ένα potíri tu krasjú
a glass the-GEN.SG wine-GEN.SG
'a wineglass'
- b. ένα ποτήρι για (το) κρασί
ένα potíri gja to krasí
a glass for (the-ACC.SG) wine-ACC.SG
'a wineglass'

As noted in a previous section, register plays a known role in genitive – prepositional phrase variation. This study does not explore the role of register, but I attempted to compose sentences of the same register in order to control for this issue.

Participants chose the best sentence completion from among four choices, each of which featured the same lexeme. In one choice the target noun was a genitive plural noun phrase with normative stress.⁶¹ One choice was a prepositional phrase with the target noun appearing in accusative plural, and with normative stress. A third choice was a genitive plural noun phrase identical to the first choice, except that the target noun had non-normative stress placement. In the case of nouns from type 1 stress paradigms, this shift was always within the final three syllables of the phonological word, as required generally in Greek, but was unmotivated because stress never shifts in these declension classes. For nouns from stress type 2 and stress type 3 paradigms, the choice with the non-normative stress presented stress leveling. A fourth choice was a prepositional phrase with an accusative plural target noun, identical to the second choice except for a non-normative stress shift on the target noun. Since none of the nouns used in this study

⁶¹ Stress is encoded orthographically in the Greek language, and I assume that speakers write stress where they would place it in speech.

had stress shift in the accusative plural, this stress shift was unmotivated for all noun classes.

Thus, three choices were viable as possible sentence completions – a normative genitive plural noun phrase, a normative prepositional phrase, and a genitive plural noun phrase exhibiting stress leveling (for types 2 and 3). By forcing speakers to choose between these three possibilities (+ one prepositional phrase filler), I was able to test native Greek speakers' preference for genitive vs. prepositional phrase according to frequency and stress type.

4.3.3.3. Questionnaire administration and subjects

I conducted this research partially as a web survey, and partially as a pencil-and-paper task. While the mediums differed, the materials were identical in each case. Questions were presented in four different orders and response options were in randomized order.

I recruited participants for the web survey through friends, colleagues and academic mailing lists known to be read by native Greek speakers. Volunteers for the pencil-and-paper task were recruited from among the student body at the Aristotle University of Thessaloniki, primarily through announcements in introductory linguistics classes and French literature classes.

Thirty-one native Greek speakers completed the survey and qualified to have their answers included in the analysis. 23 were women, 9 were men. The skew towards female subjects reflects the reality that students of the French and Linguistics sections at the Aristotle University of Thessaloniki are overwhelmingly (approximately 90%) female. There were sixteen participants aged 20-29, including all ten participants

recruited in Thessaloniki, eight aged 30-39, five aged 40-49 and two aged 50-59. All participants were college educated or in the process of pursuing an undergraduate degree. Some had lived their entire lives in Greece; others lived abroad in 2005/2006 when this study was conducted. All of the included subjects reported speaking at least some Greek in their daily lives.

These 31 subjects do not include two female and one male subject who had not lived through adulthood in Greece, and whose answers I therefore discarded.

4.3.4. Results and discussion

The most obvious result of this study is that there are main effects in the predicted directions for both stress type and lemma frequency.

As shown in Table 19, participants chose the normative genitive plural 76.7% of the time for frequent words, and 68.8% of the time for infrequent words. Conversely, participants chose the normative prepositional phrase 21.7% of the time for frequent words and 26.9% of the time for infrequent words. A chi-squared test shows that frequency is a significant factor to the level of $p < 0.01$ ($\chi^2 = 13.208$).

	gpl NP, normative stress		periphrasis, normative stress		gpl NP, non-normative stress		periphrasis, non-normative stress	
	%	N	%	N	%	N	%	N
frequent	76.7%	428	21.7%	121	1.1%	6	0.5%	3
infrequent	68.8%	384	26.9%	150	2.0%	11	2.3%	13

Table 19: Genitive vs. prepositional phrase according to frequency

	gpl NP, normative stress		periphrasis, normative stress		gpl NP, non-normative stress		periphrasis, non-normative stress	
	%	N	%	N	%	N	%	N
stress type 1	80.9%	301	17.7%	66	0.5%	2	0.8%	3
stress type 2	73.7%	274	24.7%	92	1.3%	5	0.2%	1
stress type 3	63.7%	237	30.4%	113	2.7%	10	3.2%	12

Table 20: Genitive vs. prepositional phrase according to stress type

A more robust correlation appeared between noun stress type and periphrasis; the data is given in Table 20. For target nouns with type 1 stress, survey participants chose the normative genitive plural answer 80.9% of the time, for type 2 stress words – 73.7% of the time, and for type 3 stress words – 63.7% of the time. An opposite but less robust effect is seen for the prepositional phrase – 17.7% for type 1 words, 24.7% for type 2 words and 30.4% for type 3 words. A chi-squared test indicates that stress predictability is a highly significant factor in preference for the synthetic vs. periphrastic form ($p < 0.001$, $\chi^2 = 38.541$).

However, if competing stress patterns promote speakers' avoidance of the synthetic genitive plural by causing them to be unsure about their production of genitive plural forms, we would not expect the effects for frequency and stress type to be independent of each other. Low frequency and low consistency of stress placement within the inflection class should have an interactive effect. As can be seen in the following graph, this is exactly what was found.

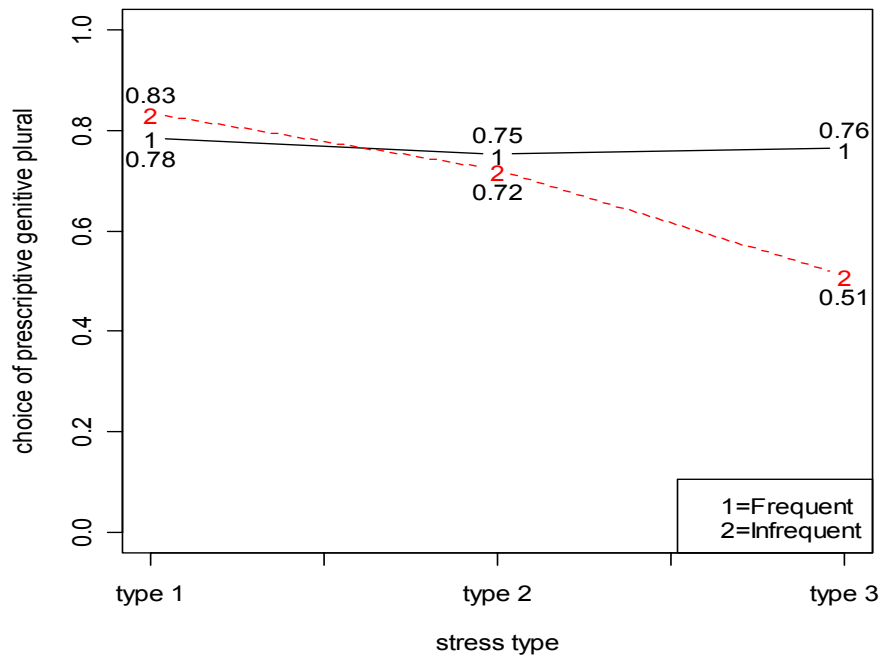


Figure 9. Interaction of frequency and stress predictability as conditioning factors for avoidance of the synthetic genitive plural form⁶²

Separating the data in this way, we can see that there is no effect for stress type apart from frequency, or for frequency apart from stress type. However, the combination of low frequency and type 3 stress entail a strong drop in the preference for the synthetic genitive plural form.

I interpret these effects as evidence that low frequency and competing stress patterns together lead speakers to be uncertain about the form of the synthetic genitive plural and thus to avoid it in favor of the periphrastic prepositional phrase for which noun stress is the same as in the nominative singular and other forms.

⁶² The values on the y-axis should be interpreted as follows: 1.0 = 100% selection of the normative genitive plural form for the given condition, 0 = any combination of the other three choices.

This result should not be surprising. Language ideology can be a powerful influence on both language use and perceptions of language use (see, for example, Blommaert 1999, Schieffelin et al. 1998). Furthermore, there is some evidence that Greek speakers feel insecure about linguistic features associated with katharevousa. Hawkins (1979) presents the results of a cloze procedure experiment designed to test the degree to which speakers are willing to codeswitch between katharevousa (K) and dhimotiki (D). Among various results, Hawkins concluded that “...speakers would switch to K for the ‘easier’ levels of phonology/orthography and morphology, but use D at the more ‘difficult’ levels of lexis and syntax” (169). While Hawkins does not specifically consider the genitive plural, his work provides some empirical support for the frequent layman’s claim that Greek speakers do (or at least in 1979 did) feel insecurity over forms of katharevousa origin, of which the genitive plural is one, and vary their use accordingly.⁶³

Moreover, the fact that speakers prefer periphrastic constructions in exactly the same classes that gaps primarily occur is striking. The best conclusion is that speakers are uncertain about genitive plural stress placement among low frequency nouns belonging to stress type 3. As a response, they tend to prefer readily available periphrastic constructions that allow them to avoid the issue of stress placement. The extreme result of this behavior is (or at least historically was) paradigmatic gaps in the genitive plural. In the following section I present a formal analysis of the Greek nominal

⁶³ I am grateful to Grace Fielder for bringing this study to my attention.

system and show that it naturally captures the relationship between defectiveness and stress predictability.⁶⁴

4.4. A formal analysis of (the distribution of) the Greek genitive plural gaps: A paradigm predictability model

The distributional and experimental evidence presented in the preceding sections points towards stress, or more precisely, stress indeterminacy, as the cause of the Greek genitive plural gaps. It is unlikely to be accidental that gaps occur precisely in the classes in which speakers prefer periphrastic constructions over (non-defective) synthetic genitive plural forms, and even less likely to be accidental that these are exactly the classes in which genitive plural stress is neither always columnar nor always fixed on a certain syllable relative to the end of the word (e.g. always on the penultimate). Moreover, a paradigmatic dimension is strongly implicated – only words which *could* have non-columnar stress (by virtue of having non-final stress in the nominative singular and other cells) are ever defective. I therefore conclude that stress predictability in the context of the paradigm is the issue underlying the distribution of the genitive plural gaps.

I argue that an explanation of (the distribution of) genitive plural defectiveness lies in understanding, and taking seriously, the sometimes non-correlation of singular segmental formatives, plural segmental formatives, and prosodic formatives that realize nominal inflection classes. I introduce the idea of a *multidimensional* inheritance hierarchy (MIH) to describe this non-correlation. The central insight of a MIH is that inheritance hierarchies have traditionally equated nodes in trees with paradigms. This is

⁶⁴ Again, I argue in the following chapter that the synchronic motivation for the gaps is more complicated.

sufficient for most languages, where there is typically a strong correlation between, e.g., singular and plural forms. However, in Greek these three dimensions cross-cut each other to an unusual degree. For Greek, a better description can be made if subparadigms (e.g., only the singular formatives) are allowed to be nodes in the tree.

I begin with an analysis of Greek inflection classes in terms of a multidimensional inheritance hierarchy, followed by a demonstration of how this structure allows us to capture the distribution of the Greek gaps.

4.4.1. A multidimensional inheritance hierarchy of Greek nominal classes

Traditional classifications of Greek noun inflection classes fails to account for two facts:

(1) Groupings based on stress patterns crosscut groupings based on segmental patterns.

The latter are typically given priority; stress is described as an internal subdistinction.

However, since both serve as markers of inflectional properties, there is no a priori reason to prioritize segmental information. (2) Singular and plural inflectional patterns seem to operate at least partially independently of each other. Neither is strongly predictive of the other in many cases. This can be seen from Table 21. Traditionally, the so-called theme vowels are considered part of the inflectional ending in Greek nouns (e.g., the stem for *kálfas* is *kálf-*, rather than *kálfa-*). However, if we assume that theme vowels are part of the stem, we can collapse some of the traditional distinctions, and better capture similarities between words whose only inflectional differences is in this vowel.⁶⁵

⁶⁵ This has one important effect on the classification of nouns into ‘type 1’, ‘type 2’ and ‘type 3’ stress. The pattern represented by *víkē* / *níki* ‘victory’ becomes part of the same class as *μητέρα* / *mitéra* ‘mother’ and *ώρα* / *óra* ‘hour’, and thus is reclassified from type 2 to type 3. See footnote 56 for how this changes the distribution of gaps among types.

		singular formatives (nom, acc, gen)					
		-ς, --, -- (-s, --, --)	--, --, -ς (--, --, -s)	-ος, -ο, -ου (-os, -o, -u)	--, --, -τα (--, --, -ta)	--, --, ου (--, --, -u)	-ος, -ος, -ους (-os, -os, -us)
plural formatives (nom, acc, gen)	-ηδες, -ηδες, -ηδων (-ides, -ides, -idon)	κόντες kóntes					
	-δες, -δες, -δων (-des, -des, -don)	μανάβης manávis καφές kafēs παππούς pappús κάλφας kálfas	μαμά mamá αλεπού alepú				
	-ες, -ες, -ων (-es, -es, -on)	πατέρας patéras φύλακας filakas τουρίστας turístas ναύτης náftis	μητέρα mitéra ώρα óra νίκη níki				
	‘-εις, ‘-εις, ‘-εων (‘-is, ‘-is, ‘-eon)	δεκανέας ðekanéas	δύναμη ḏínami				
	-εις, -εις, -ων (-is, -is, -on)	συγγενής si(n)genís					
	-οι, -ους, -ων (-i, -us, -on)	περίπλους períplus		αντίλαλος a(n)dílalos άνθρωπος ánthropos			
	-τα, -τα, -των (-ta, -ta, ‘-ton)				μέλλον méllon όνομα ónoma ηρέας iréas		
	-α, -α, -ων (-a, -a, ‘-on)					πρόσωπο prósopo σίδερο síðero αγόρι agóti	
	-η, -η, -ων (-i, -i, -on)						μέρος méros

Table 21: Greek inflectional patterns: Singular and plural formatives

This format highlights that in some cases there is a unique correspondence between the singular forms and the plural forms, as for *μέρος* / *méros* ‘part’, but in many cases there are two or more classes which share inflectional exponents only in the singular or only in the plural. For instance, *μανάβης* / *manávis* ‘greengrocer’ shares plural formatives with *μαμά* / *mamá*, but not singular formatives. It shares only singular formatives with a variety of other classes, for example that represented by *περίπλους* / *períplus* ‘circumnavigation’. Thus, in many cases, inflection classes are overlapping entities.

The same kind of mismatch can be found when comparing segmental and prosodic morphs. (Table 22 shows only the plural formatives for reason of space, but a similar mismatch exists between singular formatives and stress.)

stress formatives							
		gpl ...ός#	gpl ...ός#	gpl ...ός# gplUgsg	gpl ...ός# gplUgsg	gpl ...ός# gsgUgplUaccpl	columnar stress throughout
plural formatives (nom, acc, gen)	-ηδες, -ηδες, -ηδων (-ides, -ides, -idon)						κόντες kóntes
	-δες, -δες, -δων (-des, -des, -don)						μανάβης manávis καφές kafés παππούς pappús κάλφας kálfas μαμά mamá αλεπού alepú
	-ες, -ες, -ων (-es, -es, -on)	τουρίστας turístas ναύτης náftis ώρα óra νίκη niki	φύλακας filakas				πατέρας patéras μητέρα mitéra
	-εις, -εις, -ων (-is, -is, -eon)						δεκανέας ðekanéas δύναμη dínamí
	-εις, -εις, -ων (-is, -is, -on)						συγγενής si(n)genís
	-οι, -ους, -ων (-i, -us, -on)					άνθρωπος ánthropos	περίπλους períplus αντίλαλος a(n)dílalos
	-τα, -τα, -των (-ta, -ta, -ton)		μέλλον méllon όνομα ónoma ηρέας iréas				
	-α, -α, -ων (-a, -a, -on)			αγόρι agóri	πρόσωπο prósopo		σίδερο síðero
	-η, -η, -ων (-i, -i, -on)	μέρος méros					

Table 22: Greek inflectional patterns: Plural and stress formatives

I argue that the disconnect between the singular and plural forms and between the segmental and stress patterns should be represented as a multidimensional inheritance hierarchy in which singular, plural and stress each occupy a dimension.⁶⁶

4.4.1.1. The stress inheritance hierarchy

The nominal stress system can be represented as follows.⁶⁷

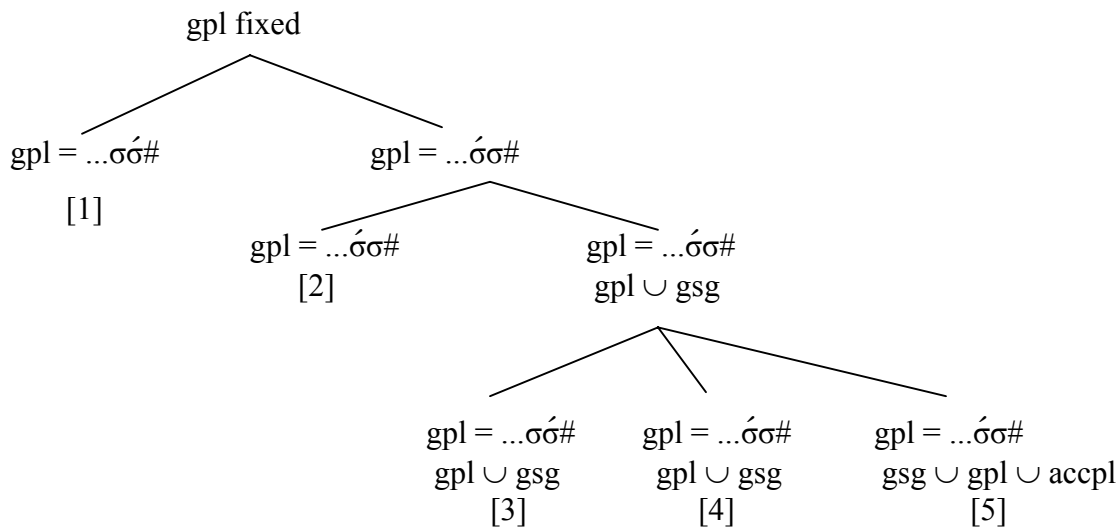


Figure 10: A default inheritance hierarchy for Greek nominal stress

Node [1] represents inflection classes which have genitive plural stress fixed on the final syllable. I assume that stems are lexically marked for stress (henceforth: *lexical stress*),

⁶⁶ The following analysis has not been computationally implemented, e.g. using the lexical language DATR (Evans and Gazdar 1996). While this would be the best way to confirm that the hierarchies function as claimed, due to time constraints verification of this sort will have to be left for future research. Still, I have every reason to believe that the analysis could be successfully implemented, so this should not diminish the weight of the argument.

⁶⁷ This hierarchy glosses over some details which would be relevant to a full account of Greek nominal stress, such as the rare case of *δεκανέας* / *dekanéas* ‘corporal’ and similar words, in which stress appears to be fixed in the nominative plural and accusative plural, but not in the other forms, including the genitive plural.

and that the information carried by the inheritance hierarchy (henceforth: *inflectional stress*) overrides lexical stress, which acts as the default. Lexical stress may fall on any of the final three syllables of the word, and may, or may not, coincide with stress assigned inflectionally. Thus, the class represented by node [1] would have lexical stress in all paradigm cells except the genitive plural. An example that follows the pattern of [1], and for which inflectional and lexical stress do not coincide, is given in Table 23.

‘tavern’	SINGULAR	PLURAL
NOM	ταβέρνα tavérna	ταβέρνες tavérnes
ACC	ταβέρνα tavérna	ταβέρνες tavérnes
GEN	ταβέρνας tavérnas	ταβερνών tavernón

Table 23: Example of stress fixed on final syllable in the Greek genitive plural

Node [2] represents inflection classes which likewise have fixed genitive plural stress, but for these examples it is fixed on the penultimate syllable.

‘friend’	SINGULAR	PLURAL
NOM	φύλακας fílakas	φύλακες fílakes
ACC	φύλακα fílaka	φύλακες fílakes
GEN	φύλακα fílaka	φυλάκων fílákon

Table 24: Example of stress fixed on penultimate syllable in the Greek genitive plural

Node [3] also represents inflection classes with final stress, but includes the generalization that the genitive singular and genitive plural have stress fixed on the same

syllable – in terms of stress placement (but not necessarily segmental material) they are syncretic. An example is given in Table 25. Note that within the structure given above, this must be considered an override of default inheritance, because penultimate stress is the expected inheritance at this node.

‘boy’	SINGULAR	PLURAL
NOM	αγόρι agóri	αγόρια agórja
ACC	αγόρι agóri	αγόρια agórja
GEN	αγοριού agorjú	αγοριών agorjón

Table 25: Example of fixed stress on final syllable in the Greek genitive singular and genitive plural

Node [4] represents the pattern in which stress is penultimate in both the genitive singular and genitive plural. The similarities between nodes [3] and [4] is captured by their representation as sisters in the hierarchy.

‘face’	SINGULAR	PLURAL
NOM	πρόσωπο prósopo	πρόσωπα prósopa
ACC	πρόσωπο prósopo	πρόσωπα prósopa
GEN	προσώπου prosópu	προσώπων prosópon

Table 26: Example of fixed stress on penultimate syllable in the Greek genitive singular and genitive plural

Finally, node [5] is likewise similar, except that the accusative plural is also syncretic with the genitive singular and genitive plural. An example is shown in Table 27.

‘man’	SINGULAR	PLURAL
NOM	άνθρωπος ánthropos	άνθρωποι ánthropi
ACC	άνθρωπο ánthropo	ανθρώπους anthrópus
GEN	ανθρώπου anthrópu	ανθρώπων anthrópon

Table 27: Example of fixed stress on the penultimate syllable in the Greek genitive singular, genitive plural, and accusative plural

This network of stem information captures all major stress patterns in the Greek nominal inflectional system. The only pattern that is not captured directly is the “type 1” stress pattern (see Section 4.1), in which stress is always columnar. Since I assume that stems are lexically specified for stress placement, there is no need to overtly specify columnar stress. It falls out naturally as a result of not being subject to any overriding inflectional stress pattern.⁶⁸

⁶⁸ Revithiadou (1998) provides a different theoretical treatment of Greek nominal stress. She argues that differences in genitive plural stress placement indicate a difference in the inherent lexical marking of roots. In her approach, roots may be lexically marked for stress, unmarked, or marked as unaccentable. Roots that are lexically marked for stress or as unaccentable have columnar stress throughout the paradigm, because stem-specified stress trumps stress specified by an inflectional suffix. Suffixal stress marking dominates in the absence of stem stress. If neither the root nor the suffix carries stress, the default realization of the stress pattern appears, meaning antepenultimate stress.

Like Revithiadou, I assume that specification of stress placement is an inherent feature of stems, and that stress in the genitive plural, accusative plural, and genitive singular is sometimes, but not always, governed by a separate generalization. My account differs, however, in that I assume that all stems carry a specification for stress placement, and that inflectional stress overrides lexical stress. Revithiadou posits the opposite: lexical stress overrides inflectional stress. To maintain economy of representation, she posits that the lexicon contains only one genitive plural morpheme, which specifies word-final stress. This leaves Revithiadou with the problem of explaining why genitive plural stress is not always word-final. In order to produce columnar stress in some instances, she must claim that root marking for stress is dominant over suffix marking for stress, but not all roots are marked for stress.

The two analyses cover equivalent empirical ground, but my approach has two advantages in terms of evaluating the theory. First, my approach captures the generalization that there is an implicational relationship between the accusative plural, the genitive singular, and the genitive plural. By treating inflectional morphemes as isolated lexical entries, Revithiadou’s theory makes these correspondences formally accidental. Second, my approach allows for the assumption that stress is always marked on the

The most important aspects of this representation are (a) that it captures implicational relations between accusative plural, genitive singular, and genitive plural stress by treating them as syncretic, and (b) it is able to treat these stress patterns as a kind of syncretism only because information about segmental information is removed.

4.4.1.2. The plural inheritance hierarchy

Another dimension of the hierarchy carries information about plural segmental formatives, as represented in Figure 11. For reasons of space, the notation has been simplified greatly, but where three morphs are specified, the first is the nominative plural, the second is the accusative plural, and the third is the genitive plural. Also, inheritance is not always specified. But as can be seen, two major generalizations are that the genitive plural is formed with [...on] (true of all inflection classes), and that the nominative plural and accusative plural are syncretic (true for all but one inflection class). These are specified on high nodes, and inherited by lower nodes.

By overlaying the stress and segmental dimensions of the hierarchy, the ways in which stress and segmental information intersect become apparent. This is represented in Figure 12 below, which includes example stems that fall into each class. The most important thing to note here is that Figure 10 neatly captures the degree to which inflection classes are related along the stress dimension, and Figure 11 does the same for the plural formatives.⁶⁹ This representation thus allows us to capture all relevant

stem. Revithiadou must assume three different stem types, but without any independent motivation for these types.

⁶⁹ In terms of a theoretical treatment, there seem to be two possible approaches to representing the relationship between singular and plural morphs. One possibility is to treat singular and plural as heteroclite, following Stump (2006). This amounts to treating stems as suppletive; the singular stem would belong to one inflection class, and the plural stem would belong to another. The singular and the plural

generalizations that determine inflectional class, without having to relegate stress information to a subdivision of segmentally-determined inflection classes, and losing the similarities and differences in stress patterns across these classes.⁷⁰ However, when those hierarchies are conflated to form complete stem classes, there is not often a one-to-one correspondence. Of particular importance here is that two stem paradigms may be represented by a single node in the plural hierarchy, but multiple nodes in the stress hierarchy. This is equivalent to inheritance from multiple mothers, which I identified in Section 3.5 as a major source of paradigm non-predictability.

would each have their own inheritance hierarchies, and be united by being linked to cells in a single lexeme paradigm. Under this approach, the singular stems of *μανάβης* / *manávis* and *περίπλους* / *períplus* would belong to the same inflection class, but the plural stems would belong to different inflection classes. Another possibility is that one inflection class could be deemed basic, and the source of inheritance for the other classes. In this approach, *περίπλους* / *períplus* and *μανάβης* / *manávis* do not belong to the same inflection class, even in the singular, but they inherit their singular specifications from the same source, thereby linking them. This approach utilizes a version of rules of referral.

There is no clear reason to choose one approach over the other. The former is problematic because it posits suppletive stems for most words which are nonetheless usually homophonous. The second approach is also problematic; it forces one inflection class to be considered primary, without there being any evidence for such a status, as the target of a rule of referral. In the end, I lean towards the former position because it simplifies the representation to be able to remove the singular forms, but this is an issue of convenience more than a theoretical claim.

⁷⁰ This proposal is in the spirit of redundancy rules (Jackendoff 1975). Redundancy rules do not serve a primary role in the generation of word forms, but capture the degree to which any particular inflection class is independent of others. In my proposal, this function of generalizing patterns over disparate classes is carried by the multidimensionality of the inheritance hierarchy.

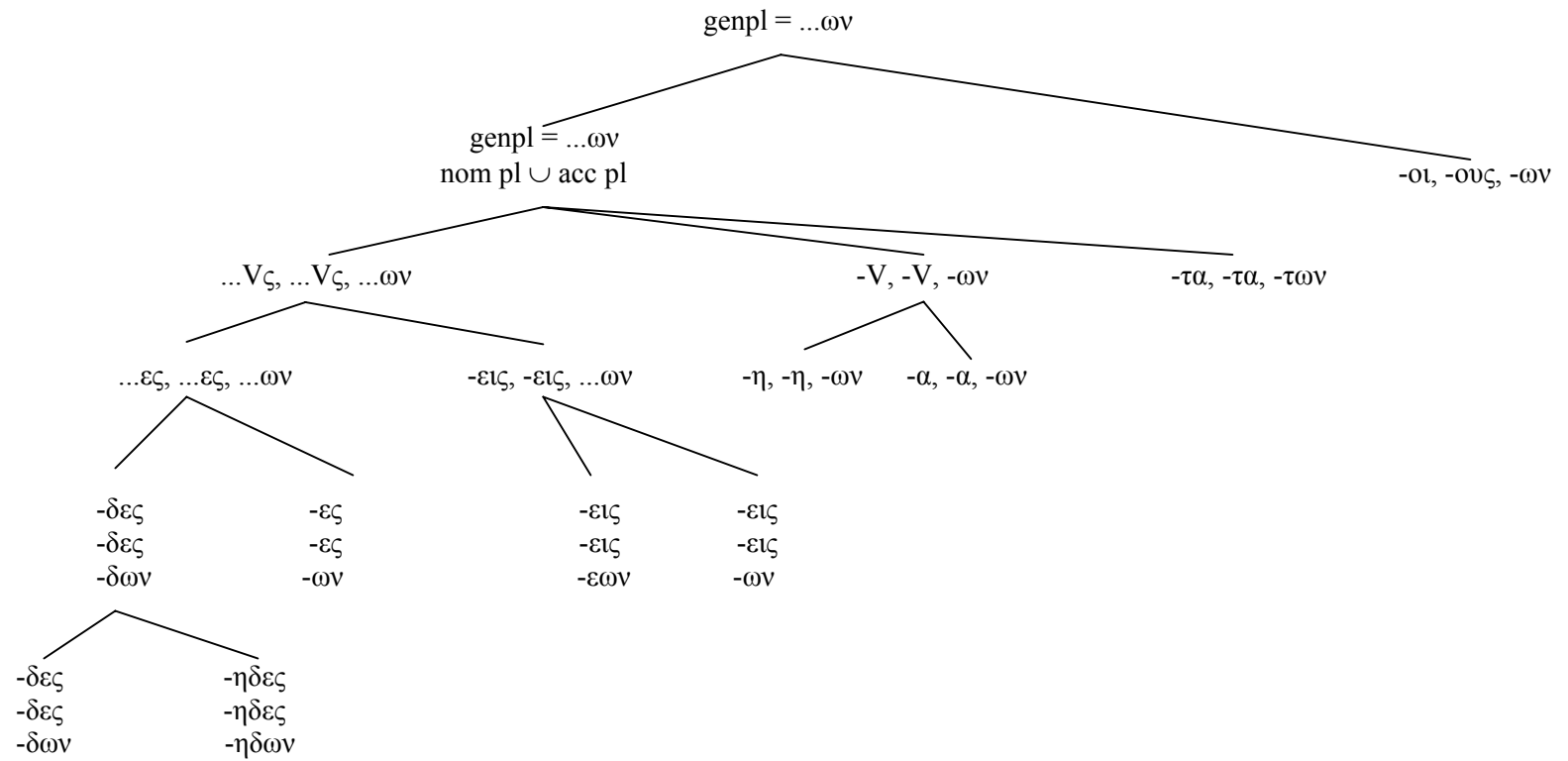


Figure 11: A default inheritance hierarchy for segmental inflection of plural Greek nouns

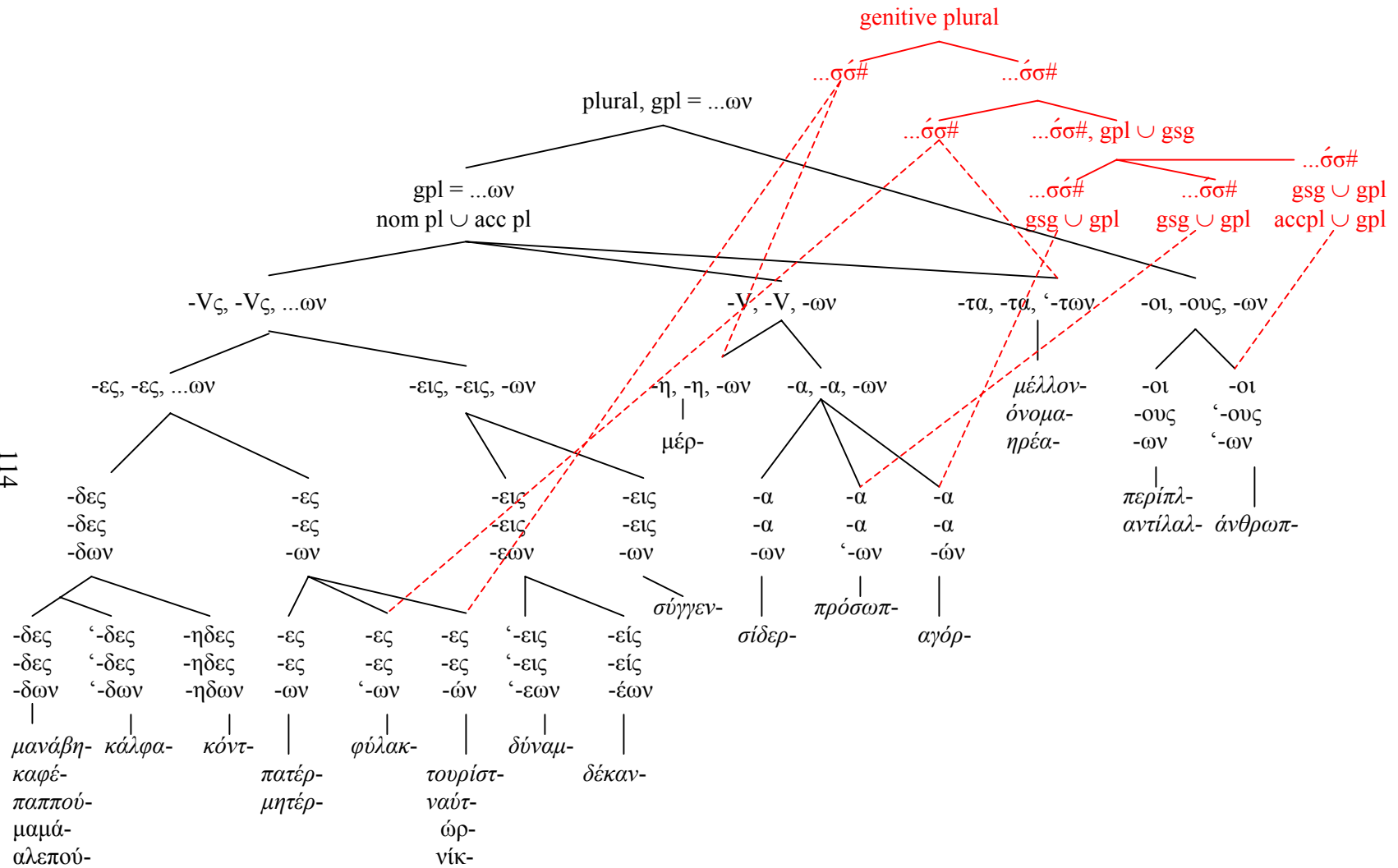


Figure 12: A multidimensional default inheritance hierarchy for plural inflection of Greek nouns

4.4.2. The paradigmatic structure of paradigmatic gaps

The hierarchy in Figure 12 provides all of the information needed to capture the distribution of the Greek gaps in a motivated way.

Remember from Section 4.2 that defective lexemes are not evenly distributed among type 3 classes. In fact, ninety-eight percent of the paradigmatic gaps in Modern Greek appear in the inflection classes represented by the shaded cells in Table 21 and Table 22. Only a small handful occur in other classes, including some classes that have type 3 stress. Most notably, the type 3 inflection class represented by *σίδερο* / *síðero* and *πρόσωπο* / *prósopo* contains only 24 defective lexemes. The key question is: What makes classes like *μητέρα* / *mitéra*, which has lots of defective lexemes, different from classes like *πρόσωπο* / *prósopo*, which has very few? In both cases genitive plural stress placement is not consistent within the class and must be lexically specified (this is the definition of a type 3 class). To see the difference, we must look more closely at the inheritance structure. The parts of the hierarchy that are related to the shaded cells in Table 21 is pulled out of the larger analysis of the inflectional system and repeated as Figure 13. The same is done for *σίδερο* / *síðero* and *πρόσωπο* / *prósopo* in Figure 14 below.

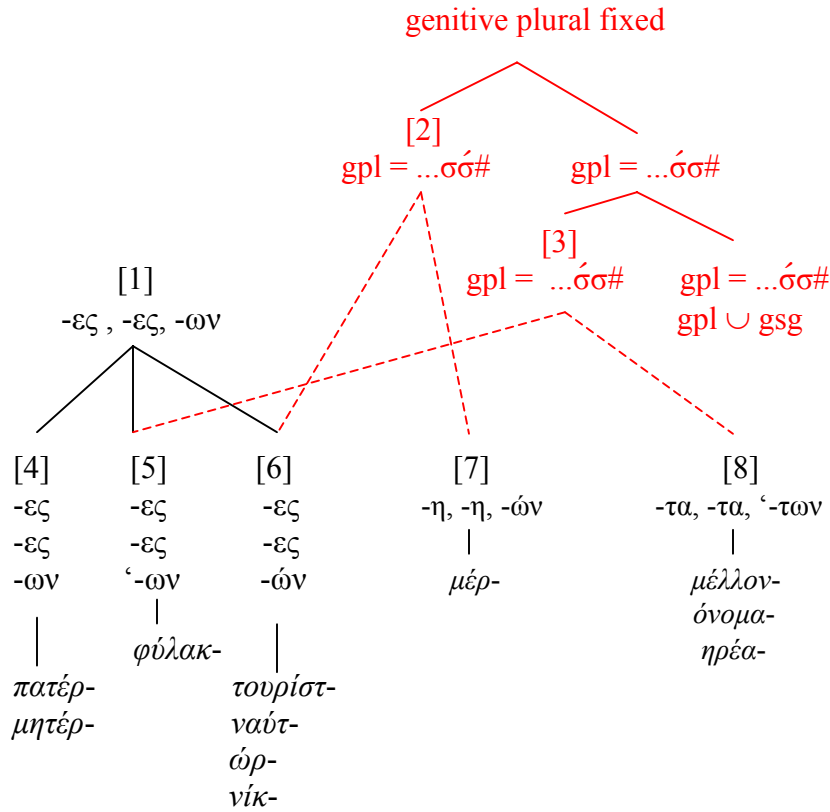


Figure 13: Inheritance hierarchy for the classes in which 98% of Greek genitive plural gaps occur

I claim that paradigmatic gaps are clustered under nodes [4] through [6] in Figure 13 because within these paradigms the genitive plural is poorly integrated into paradigmatic structure. A cell is integrated with its paradigm if it is either a good predictor of other inflectional forms or well predicted by them. The more unique a particular inflectional marker is to a particular inflection class, the better a word form that includes that marker is as a predictor of all other forms (it is or is close to being a principal part). Principal parts are thus a stabilizing force within an inflectional paradigm, and we can hypothesize that they have a special (basic) status as a result. On

the other hand, if an inflectional marker is shared by multiple classes, it is a bad predictor. Bad predictors entail grammar competition by their very nature.

No fewer than three word forms of a given lexeme must be known in order to fully predict the other inflected forms of a lexeme for each of the three classes under [1] – the genitive plural, another plural form, and a singular form. In other words, there is no single principal part, and no particularly good predictors. This many forms is necessary because of the lack of correspondence between singular segmental patterns, plural segmental patterns, and stress patterns. And the genitive plural by itself is a particularly bad predictor; the paradigms under nodes [5] and [6] overlap in the genitive plural with other paradigms along both the segmental dimension and the stress dimension. Within a default inheritance hierarchy, this is represented as the lack of a one-to-one linkage between dimensions.

But importantly, only the genitive plural is badly predicted. From the nominative plural the accusative plural can be predicted, and vice versa. The same applies to all three singular formatives. But the genitive plural cannot be predicted from other cells because of the cross-cutting stress dimension. This lack of both predictiveness and predictability makes the genitive plural a particularly weak spot in the inflectional paradigm of these words.

The importance of predictability rather than simply stress variability can be seen by comparing the fragment of the inheritance hierarchy in Figure 13 with the one in Figure 14.

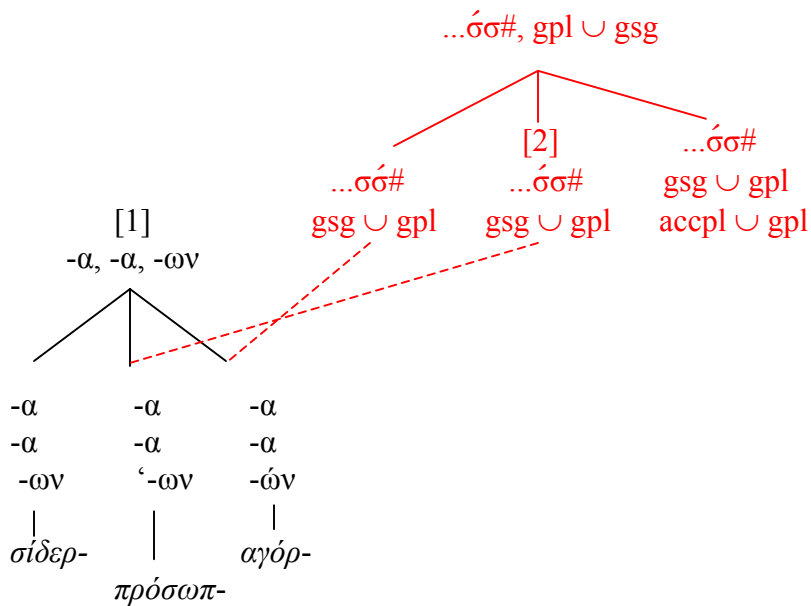


Figure 14: A similar inheritance hierarchy, but without a significant number of gaps

In both cases the segmental characteristics of the inflection class are crosscut by three stress patterns. But the difference between these two areas of the lexicon lies in the degree to which the genitive plural is isolated within the paradigm. In Figure 14, the genitive plural is predictable from the genitive singular. The syncretism of the genitive singular and the genitive plural along the stress dimension ensures this. Whatever syllable stress is on in the genitive singular, there is an entailment such that it is also on that syllable in the genitive plural. Since the genitive plural segmental material is always predictable from any other cell in the paradigm, this means that within the structure of the inheritance hierarchy, the genitive plural can be predicted entirely. It is therefore better

integrated for these classes than for those represented by nodes [4] through [6] in Figure 13.⁷¹

The primary conclusion that we can draw from this analysis is that having type 3 stress is a necessary but not sufficient condition for having gaps. While these two areas of the lexicon are equal in having multiple genitive plural stress patterns associated with a single set of segmental formatives, only in the area where we find a great number of gaps is the genitive plural both a bad predictor and badly predicted. Less predictability and predictiveness means more paradigmatic competition, and may mean more motivation for avoidance, and ultimately the appearance of gaps.

Albright (2003) comes to a similar conclusion for Spanish (see Section 2.1.1 for the data). He argues that gaps in Spanish are caused by low reliability of the relevant inflectional rules for the defective cell. However, he looks only at predictability based on a base form (which may or may not be the best predictor), not total degree of integration of the defective cell within the paradigm. For Greek, the more total picture of the paradigm is needed; Albright's analysis would seem to (incorrectly) predict that the area of the lexicon represented in Figure 14 would also have a large number of gaps.

There are also commonalities with Hansson's analysis of Icelandic (see Section 2.1.2). In Hansson's analysis (although not in his terminology), a group of lexemes would be expected to be defective in the imperative, but defectiveness is blocked by syncretism between the imperative and the past tense. Likewise, in Greek the type 3 nouns that are not defective are those which exhibit stress-level syncretism between the

⁷¹ Actually, recall from Table 21 that for the classes in Figure 14 there is a one-to-one correspondence between the singular and plural segmental patterns. Outside of the genitive plural, there is no overlap with other paradigms along the segmental dimension. The genitive singular form is thus sufficient to predict not only the genitive plural form, but all word forms of a given lexeme.

genitive singular and plural. It thus seems likely that Hansson's argument could be recast in terms of paradigm predictability.

In the end, defining competition at the level of the paradigm, and in terms of predictability rather than variability takes full account of the data. For example, the lack of gaps in words with final stress throughout the paradigm makes sense under this view. The genitive plural form of these words is always predictable based on any other inflected form of the same lexeme, regardless of inflection class membership. And predictability is an inherently paradigmatic concept. Variability is not.

4.5. Conclusions and summary

In this chapter I have presented a variety of evidence which suggests that the distribution of paradigmatic gaps in the genitive plural of Modern Greek nouns is closely tied to generalizations about stress placement in that cell. Paradigmatic gaps present a skewed distribution; gaps appear in the (segmentally defined) inflection classes with the greatest variability in the stress pattern, and within those classes, in the forms which could have a stress shift. Also, via a forced choice task I demonstrated that speakers are most likely to prefer periphrastic constructions when the synthetic genitive plural form is both low frequency and belongs to a class which exhibits variability in genitive plural stress placement. This data suggests that this variability causes Greek speakers to be insecure about their use of the genitive plural and triggers an avoidance strategy. The best conclusion is that the genitive plural gaps are (historically) the result of this avoidance.

I presented an analysis in terms of a default inheritance hierarchy. In contrast to previous accounts of Greek stress and traditional descriptions, I argue that singular

segmental formatives, plural segmental formatives, and stress formatives should be classified separately because there is often not a strong correlation along these three dimensions. The stress and segmental hierarchies combine to determine the inflectional class of a particular stem.

Separated in this way, it became apparent that the issue is not stress variation *per se*, but rather the predictability of stress placement. There are many classes with stress variability in the genitive plural. Within some (e.g. those in which genitive singular and genitive plural are syncretic along the stress dimension), the genitive singular serves as a principal part, from which all other inflected forms and the inflection class generally may be inferred. These classes have very few paradigmatic gaps. Within other classes, the genitive plural may not be predicted from nor is predictive of the other inflected forms. Virtually all gaps fall into this group of inflection classes. Paradigm predictability also explains the disproportionately low number of gaps among stems with word-final stress. In these cases, the genitive plural form may be predicted from any other form, regardless of inflection class membership.

Ultimately, the data strongly suggest that paradigmatic structure must formally include implicational relations that hold among cells of the paradigm, and that morphological structure is sensitive to paradigmatic cells that are less well integrated in this regard, what I call weak points in the paradigm.

CHAPTER 5

THE MODERN GREEK GENITIVE PLURAL REVISITED: ON THE POSSIBILITY OF SYNCHRONIC MOTIVATION FOR INFLECTIONAL DEFECTIVENESS

In CHAPTER 4 I presented an analysis of gaps in the genitive plural of Modern Greek nouns that was based on the idea of paradigm predictability. I argued that the inflection classes containing a large number of gaps are exactly those for which the genitive plural is least integrated into paradigmatic structure. In this way, paradigm predictability provides a natural explanation for which classes, and which paradigm cell in those classes, are defective.

At the same time, I tried to sidestep the question of how, exactly, paradigmatic gaps should be formally represented. This is essentially a question about whether there is a synchronic connection between stress indeterminacy and defectiveness. The analysis in CHAPTER 4 should be taken as related to the original motivation for the appearance of paradigmatic gaps. In both Greek and other languages, the extent to which paradigmatic gaps *continue* to be synchronically motivated by those same factors after first appearing remains an open question. In short, it is unclear whether paradigmatic gaps, like other aspects of morphology, can be lexicalized.

Some recent studies have implied that inflectional structure *must* provide synchronic explanatory force for defectiveness. This claim is typically framed in relation

to productivity and learnability. For example, in his discussion of the English gap **amn't*, Hudson (2000:298) states that: “What is needed... is an analysis of the relevant parts of English that will explain the remarkable stability of this gap. There must be something about the grammar of English that causes the gap in a way that speakers don’t need any evidence for it and don’t try to fill it.” Like many linguists who have been influenced by poverty of the stimulus arguments (Chomsky 1980), Hudson equates implicit negative evidence with a lack of evidence.⁷² This leads to the assumption that there is insufficient evidence to learn **amn't* based on patterns of usage, and as a result, he concludes that **amn't* can be persistently defective only if grammatical structure somehow blocks productivity. Otherwise, any “missing” word form should be filled in automatically, because there is no other way to know that it is defective. Logically, this argument amounts to a prediction that inflectional defectiveness cannot be lexicalized. Once paradigmatic gaps have become disconnected from their original causes, there is (supposedly) no evidence from which lexicalized gaps can be learned, and they therefore should not be able to persist.

In this chapter I challenge that claim. I do not address the learnability issue directly (but see the brief discussion in CHAPTER 7), but rather, look again at the connection between stress and defectiveness in Greek. Among previous studies, the most successful argument for paradigmatic gaps as an active, epiphenomenal byproduct of grammatical structure is Albright’s (2003) experimental study of Spanish. Since gaps in

⁷² Although there is not space to argue in detail, there is a substantial difference between having no evidence about usage, and having evidence of non-usage. Here, it is sufficient to note that Hudson’s claim that “there must be something about the grammar of English that causes the gap” only holds if speakers are incapable of learning that a given lexeme is defective based on patterns of usage. If this assumption is removed, it might still be true that English grammar provides synchronic motivation for the **amn't* gap, but it is not *necessarily* true. The same logic can be applied to the Greek gaps.

Spanish and Modern Greek bear strong similarities, I repeated Albright's methodology. I take different results in Greek as evidence that despite the availability of this synchronic motivation, speakers treat genitive plural gaps as examples of lexicalized defectiveness, at best indirectly related to the issue of stress placement. Ultimately, the point is that the distribution of gaps in Modern Greek is misleading regarding their synchronic structure.

5.1. Gaps as epiphenomena: Predictions

Albright's (2003) analysis of Spanish paradigmatic gaps provides a model for demonstrating an active, synchronic connection between a morphophonological alternation and inflectional defectiveness. I first summarize Albright's analysis, and then use it as a way to consider what evidence would be needed in order to properly draw this conclusion for the gaps in the genitive plural of Modern Greek nouns. The inflectional structure of Modern Greek nominal classes, and its relation to the Greek genitive plural gaps, was discussed in detail in CHAPTER 4 and is not repeated here.

Albright investigates two types of present tense indicative gaps in Spanish, what he calls anti-stress gaps and anti-egotistic gaps. The basic data is repeated from CHAPTER 2 as Table 28 and Table 29 below. Verbs with anti-stress gaps are defective in all singular cells and in the third person plural. Verbs with anti-egotistic gaps are defective in the first person singular.

abolir 'to abolish'	singular	plural	asir 'to grasp'	singular	plural
1st person	*	abolimos	1st person	*	asimos
2nd person	*	abolís	2nd person	ases	asís
3rd person	*	*	3rd person	ase	asen

Table 28: Present tense indicative gaps in Spanish, repeated

sentir ‘to feel’	singular	plural
1st person	s[jé]nto	s[e]ntimos
2nd person	s[jé]ntes	s[e]ntís
3rd person	s[jé]nte	s[jé]nten

crecer ‘to grow’	singular	plural
1st person	cré[sk]o	cre[s]émos
2nd person	cré[s]es	cre[s]éis
3rd person	cré[s]e	cré[s]en

pedir ‘to ask’	singular	plural
1st person	p[í]do	p[e]dímos
2nd person	p[í]des	p[e]dís
3rd person	p[í]de	p[í]den

Table 29: Morphophonological alternations in the present indicative of Spanish, repeated

These gaps resemble the Greek case in three respects. First, the Spanish gaps occur in exactly the paradigm cells that contain a morphophonological alternation, and the verbs meet the structural conditions for the alternation. Second, the alternations do not apply uniformly where their conditioning environments are met. As with the stress shifts seen in the Greek genitive plural, the alternations apply probabilistically within the inflection class. Third, as in Greek, defective Spanish lexemes disproportionately cluster in the classes for which the alternations are most variable.

Albright’s basic proposal is that frequency and inflectional structure interact to create gradient uncertainty within the process of generating an inflected word form. To simplify, it is by now well accepted that the inflected forms of frequent lexemes are not generated each time they are produced (e.g., Alegre and Gordon 1998, Hay 2001, Schreuder and Baayen 1995). However, the less (relatively) frequent a verb is, the more likely it is to be actively generated by inflectional rule. In Albright’s model, rules realizing the same inflectional properties compete probabilistically to apply to a given stem, based on rule reliability within the phonological environment(s) defined by the

stem. The proportion of stems with the relevant phonological property which undergo that rule is the primary determinant of rule reliability. “If a change occurs consistently in a particular environment, then the corresponding rule will have high reliability (approaching 100%). If, however, a change occurs in only half the words in a particular environment, then the rule for this environment will have low reliability (50%)” (Albright 2003:10). In his analysis, (low) frequency and (low) rule reliability combine to produce a gradient effect of speaker uncertainty, the extreme result of which is a paradigmatic gap. Paradigmatic gaps thus result directly from the process of generating inflected word forms and have no independent status in the lexicon. They are a side effect of competition between inflectional rules; formally, they are epiphenomena.

Based on the analysis in CHAPTER 4, Modern Greek seems to be amenable to the same type of analysis. In particular, Greek speakers’ preference for a periphrastic construction over an available genitive plural form when the target lexeme is both infrequent and belongs to a class with an unpredictable stress shift is exactly the kind of gradient behavior that we would expect to find if low reliability of the various stress patterns cause paradigmatic gaps.

At the same time, there are several reasons why we should be cautious in jumping to the conclusion that the Greek gaps (or any other paradigmatic gaps, for that matter) are an active result of word form generation. First, morphological forms tend to be lexicalized under a variety of conditions having to do with processing, learning and other factors (see Brinton and Traugott 2005 for an overview). Given that paradigmatic gaps are subject to many of the same principles as non-defective forms, we must wonder whether gaps also resemble other morphological forms in being subject to lexicalization.

Second, lexicalization must have taken place *prior* to the loss of motivation for the rule. Otherwise, the loss of the rule would entail the loss of the relevant morphological form (see the discussion of Janda (2003) in Section 5.3 below for this line of argumentation as applied to phonemic split). Third and finally, Joseph (1997), among others, argues that speakers' generalizations about their language are smaller in scope than the generalizations that the language potentially motivates (not to mention smaller than the generalizations that linguists tend to formulate).

Together, these issues raise the possibility of a discrepancy between what the distribution of paradigmatic gaps suggests regarding synchronic motivation, and speakers' actual generalizations. The problem lies in the fact that *even lexicalized* paradigmatic gaps could be expected to retain a (previously motivated) distributional skew. If our goal is to model speakers' knowledge of their language, distributional data is thus insufficient by itself to distinguish between defectiveness which is epiphenomenally produced by the generative inflectional system, and lexically specified defectiveness. We must be alert to the possibility that a given distributional pattern for paradigmatic gaps may already be a historical remnant as far as the native speaker is concerned.

Albright's study demonstrates a way to distinguish between paradigmatic gaps as epiphenomena of regular processes vs. gaps as independent generalization. Simply, he showed experimentally that Spanish speakers treat defective and non-defective lexemes as a unified group. In a production task, the extent to which native Spanish speakers agreed on the first person singular form of lexemes (= intersubject agreement) was gradient, with verbs with first person singular gaps generally falling into the lowest range

of agreement, and non-defective lexemes leading to higher levels of agreement.

Moreover, when subjects were asked to rate how confident they were that they have produced the “correct” word form, speakers’ confidence correlated positively with intersubject agreement, and defective and non-defective lexemes fell along a single continuum. Taking intersubject agreement as a measure of rule reliability, Albright concludes based on this evidence that low reliability + low frequency leads speakers to be less confident in their productions, the end result of which is paradigmatic gaps (presumably as a result of avoidance).

We can rephrase Albright’s results as a test. If paradigmatic gaps are an active product of this kind of morphological competition, we should expect to find the following:

- Prediction 1: The degree to which native subjects agree on the form of a word should be positively correlated with how confident each individual subject is that his/her production is “correct”.

This would suggest that word form unpredictability causes speaker insecurity.

- Prediction 2: Defective and non-defective lexemes in the same inflection class should behave as a single category with regard to intersubject agreement and subject confidence.

This would indicate that the same generalization(s) govern both non-defective inflected forms and paradigmatic gaps. If these two conditions hold true, we can properly conclude that the relevant paradigmatic gaps are an active result of word form generation. If, however, defective and non-defective lexemes show categorically different behavior, we can conclude that the paradigmatic gaps have been lexicalized. In the following sections I apply this test to the Modern Greek genitive plural gaps.

5.2. A production and ratings task

5.2.1. Methodology

This experiment largely replicates Albright's method, although some of the details were modified slightly, most notably the scale used for ratings subjects' productions.

5.2.1.1. Target words

These three tasks presented 30 target nouns: 16 lexemes which are prescriptively defective in the genitive plural and 14 which are prescriptively non-defective in the genitive plural according to two major dictionaries, the *Lexikó tis Koinís Neoellinikís* (LKN, 1998) and the *Lexikó tis Néas Ellinikís Glóssas* (Babinotis 1998).⁷³ Among the non-defective lexemes, eight have a stress shift in the genitive plural to the final syllable according to the LKN, as in the example for 'tavern'. Six words have no stress shift, as in the example for 'portion'.

⁷³ The experiment was originally designed to have 15 defective nouns and 15 non-defective ones. However, after the experiment had been administered, one of the non-defective test items was found to have been miscategorized.

NO GAP, WITH A STRESS SHIFT		
‘tavern’	SINGULAR	PLURAL
NOM	ταβέρνα tavérna	ταβέρνες tavérnes
ACC	ταβέρνα tavérna	ταβέρνες tavérnes
GEN	ταβέρνας tavérnas	ταβερνών tavernón

GAP		
‘girl’	SINGULAR	PLURAL
NOM	κοπέλα kopéla	κοπέλες kopéles
ACC	κοπέλα kopéla	κοπέλες kopéles
GEN	κοπέλας kopéla	*

NO GAP, NO STRESS SHIFT		
‘portion’	SINGULAR	PLURAL
NOM	μερίδα merída	μερίδες merídes
ACC	μερίδα merída	μερίδες merídes
GEN	μερίδας merída	μερίδων merídon

Table 30: Examples of stimulus types for production and ratings experiment

The status of these items was confirmed by searching the Hellenic National Corpus (HNC). The items ranged in frequency but all had a lemma frequency of at least one token per million words of corpus (= 46 raw instances). None of the nouns with prescribed genitive plural gaps had genitive plural forms attested in the HNC. All of the prescriptively non-defective items had genitive plural forms attested in the HNC. The defective and non-defective target nouns had comparable lemma frequencies ($|t|=0.05$, $p=0.963$).

All 30 target nouns belonged to the inflection class exemplified in Table 31. I chose this inflection class because it has by far the largest number of gaps (see APPENDIX A), it is one of the largest nominal inflection classes overall in Greek, and

because it is a class with no stress shift in any form other than the genitive plural. All of the selected words had penultimate stress in the non-genitive-plural forms.

‘mother’	SINGULAR	PLURAL
NOM	μητέρα mitéra	μητέρες mitéres
ACC	μητέρα mitéra	μητέρες mitéres
GEN	μητέρας mitéras	μητέρων mitéron

‘hour’	SINGULAR	PLURAL
NOM	ώρα óra	ώρες óres
ACC	ώρα óra	ώρες óres
GEN	ώρας óras	ωρών orón

‘hope’	SINGULAR	PLURAL
NOM	ελπίδα elpída	ελπίδες elpídes
ACC	ελπίδα elpída	ελπίδες elpídes
GEN	ελπίδας elpídas	ελπίδων elpídon

‘tomato’	SINGULAR	PLURAL
NOM	ντομάτα domáta	ντομάτες domátes
ACC	ντομάτα domáta	ντομάτες domátes
GEN	ντομάτας domátas	ντοματών domatón

Table 31: Greek inflection class used for production and ratings experiment

The questionnaire additionally presented 40 filler nouns. These nouns belonged to various inflection classes, and were designed to represent various levels of inflectional difficulty, including regular productive nouns, indeclinable nouns, nouns strongly associated with katharevousa, nouns with known morphological variation, and nouns in singleton inflectional classes.

Finally, the test also included 10 nouns that were intended as controls because they belong to classes that have columnar stress throughout, e.g. *παπουτσήs* / *paputsís* ‘shoe maker’. My intention was that these would be words that are subject to no significant morphological variation, and which therefore would likely represent the maximal confidence that speakers could have in genitive plural forms. However, it turns out that several of these words vary between two inflection classes (for reasons unrelated

to genitive plural defectiveness). For instance, a frame for the genitive plural elicited both *παπουτσήδων* / *paputsídon* (in five different spelling variants) and *παππουτσών* / *paputsón*. Due to this variation, these nouns are not suitable for the purpose for which I intended them. I do not report on them below.

5.2.1.2. Tasks

For each of the 80 nouns, subjects performed five tasks – two production tasks, two self-judgments of their productions, and a lexeme familiarity ratings task.

In the main section, a forced production/ratings task, participants filled a sentence blank with the most natural form of a provided word. The questionnaire presented the stimulus words in the nominative singular, which is the standard citation form in Greek. Each lexeme was elicited in two different forms. For target nouns, the sentential frames required the genitive plural and either the nominative singular or the nominative plural. For the filler nouns, the case-number form required by the sentential frames varied, and included all inflected forms except the genitive plural. After writing the necessary form of the word, subjects rated their confidence in their own production using a percentage scale.

Since the questionnaire presented each stimulus word twice, the main section of the questionnaire contained 160 sentential frames, and 160 corresponding ratings requests (60 target; 80 filler, 20 controls).

The familiarity judgment task was a pretest in which participants rated their familiarity with and use of Greek nouns on a 6-point Likert scale. I presented the stimulus words in the nominative singular. In the analysis, I removed production

responses and production ratings for those lexemes which speakers rated below a 3 (“I am familiar with this word, but I don’t use it”) on the pretest. More than half of subjects rated two target words below this threshold: *κορβανά* / *korvaná* ‘coffer’, and *βαγενά* / *vayená* ‘barrel maker’. Both of these belong to the “different inflection class than gaps” group. I ultimately did not analyze this group for reasons described above. For all other target words, familiarity ratings below 3 were sporadic and rare.

I administered this questionnaire as a pencil-and-paper task. Participants were not timed.

5.2.1.3. Participants

I recruited participants for the questionnaire from among the student body at the Aristotle University of Thessaloniki, primarily through announcements in introductory linguistics classes and French literature classes. Thirty-five native Greek speakers completed the survey and qualified to have their answers included in the analysis.⁷⁴

- Thirty-one were women, four were men. The skew towards female subjects reflects the reality that students of the French and Linguistics section at the Aristotle University of Thessaloniki are overwhelmingly (approximately 90%) female. Thirty-four of the subjects were 18-30 years old in 2006; the exception was a 38 year old female. I analyzed her answers for deviance from those of the

⁷⁴ This number does not include seven subjects whose responses were excluded for the following reasons: (a) A background questionnaire revealed that three subjects did not learn Greek as their first language. (b) Three subjects did not provide a complete set of responses. Of these, two refused to provide forms where they perceived there to be a paradigmatic gap (they wrote that no form exists). This is a telling reaction, but problematic for conducting statistical tests. (c) One subject provided a production self-rating of 99 or 100 for all 160 stimuli on the questionnaire.

remainder of the subjects. No notable differences were found, so her answers are included in the following data.

- All participants were in the process of pursuing an undergraduate degree or graduate degree.
- All had lived through adulthood in Greece and currently live in Thessaloniki. Eleven had been raised in Thessaloniki. Among the remaining subjects, 6 grew up primarily in Athens, 4 in the city of Serres, 2 in Veroia, and 11 in other villages and towns, primarily in northern Greece. The home town of one subject was not available.
- All reported knowing at least one language well other than Greek, usually English and French, but none reported a second native language.

5.2.2. Results

5.2.2.1. Variability in rating genitive plurals

The first major result is that with the exception of one person whose results have been excluded (see (c) in footnote 74), subjects were not equally confident in all of their own productions. Virtually without exception, nominative forms received maximal confidence scores, while ratings for the genitive plural of the same lexemes varied widely. I present the confidence ratings as a ratio relative to a given person's average confidence rating for all forms sharing the same inflectional property set. For example, a given nominative singular form is measured against the average for that speaker for all nominative singular. A given genitive plural is measured against all genitive plurals. These ratios are then averaged across subjects to produce a single point per item. All items with an average

familiarity rating above 3 (“I am familiar with this word, but I don’t use it”) are included. If speakers were equally confident in all forms, etc., we would expect the values to cluster around 1.0 on the y-axis, indicating little deviance from the average for words expressing that inflectional property set. As the graph shows, subjects tended to be equally confident in all nominative forms, but their ratings for genitive plural forms varied significantly.

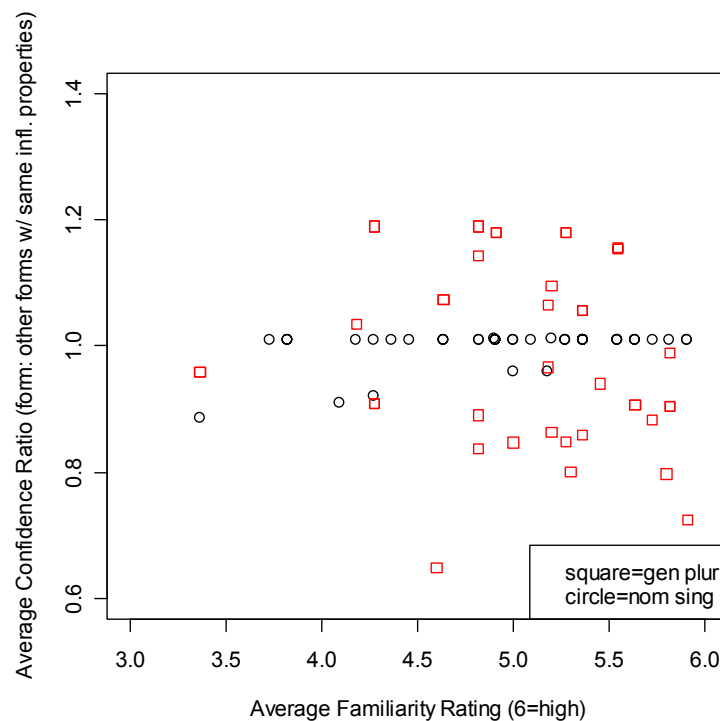


Figure 15: Greater variance among genitive plural forms than among nominative singular forms

Note also that contrary to expectations, there is no major effect for familiarity. Single linear regression does indicate that confidence decreases slightly as words become less familiar, but was only marginally significant ($p < 0.05$, $df = 150$). This fit also accounted for virtually none of the variance ($R^2 = 0.02871$). I conclude that in this task,

familiarity with a lexeme had little to no impact on Greek speakers' confidence in producing a form of that lexeme.

5.2.2.2. Subject confidence: A bimodal distribution

Even more importantly, the genitive plural test items resulted in a bimodal distribution of confidence ratings according to defectiveness. Figure 16 gives a density plot of subjects' ratings of their genitive plural productions, expressed as a rank ordering of scores.⁷⁵ A value of 30 indicates that a given subject ranked the relevant stimulus as the best among all 30 genitive plural target items. A score of 1 indicates that the subject ranked the relevant stimulus as the worst among all targets. Ties were possible, in which case all tied stimuli received the average rank. In the density plot below, ranks are aggregated across all 35 subjects.

As shown in this plot, the genitive plural forms of non-defective lexemes were consistently ranked higher than the genitive plural forms of defective lexemes. Subjects were remarkably consistent in rating this way. According to two-sample difference of the means tests calculated within subject using raw scores, ratings for non-defective genitive plural forms were significantly higher than ratings for defective genitive plural forms for 34 of 35 subjects ($p < 0.001$ for 33 subjects, $p < 0.01$ for 1 subject, and $p = 0.22$ for one subject).

⁷⁵ Rank order is used instead of raw percentiles because subjects used different ranges of ratings. Some subjects consistently rated their productions in the top half of the percentage scale, regardless of stimulus type; others consistently rated their productions in the bottom half of the percentage scale, and still others used the entire scale. A few subjects apparently felt constrained by the scale and gave scores above 100 and/or below 0. This indicates the need for normalization. However, the typical methods for normalizing across subjects (e.g., z-scores) were inapplicable because the data do not follow a normal distribution. Performing a rank order transformation provides a reasonable scale for comparing across subjects and minimizes the effects of non-normality in parametric tests.

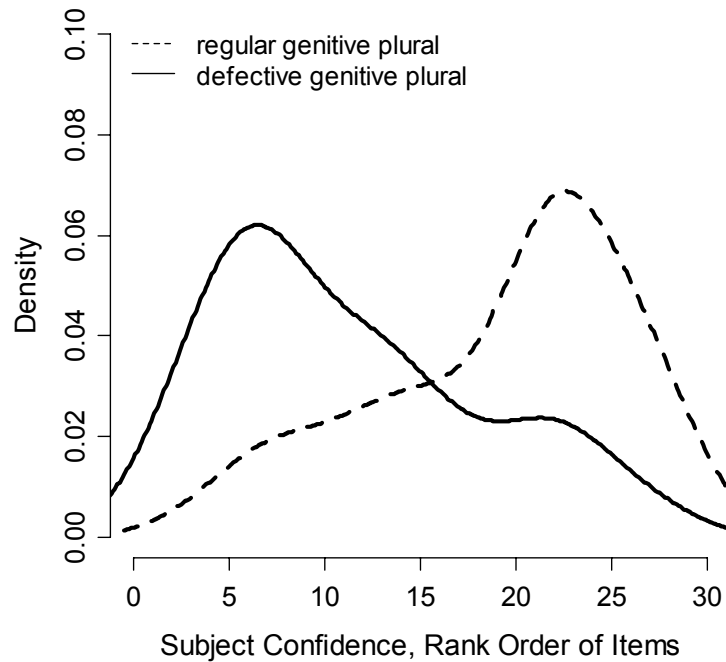


Figure 16: Density plot of subjects' confidence in their genitive plural forms

Also, note that while the data show two clear modes, for both defective and non-defective lexemes there is a flattening of the slope of the tail at approximately the peak density of the other stimulus type. This suggests that there may not be a clear, binary distinction between paradigmatic gaps and regularly inflected genitive plural forms. In other words, some subjects treated some supposedly non-defective lexemes as if they were defective, and vice versa. Either the boundary between being defective and non-defective is inherently fuzzy, or there is minor variability on a lexeme-by-lexeme and/or subject-by-subject basis.

On this point, there is some fortuitous, if unintended data. In the process of collecting data for this forced production and ratings survey, two informants refused to

provide certain forms for certain words. As they explained to me, they were concerned that as a non-native (and very poor) speaker of Greek, I perhaps was not aware that some of the words in my survey could not be used in the way the sentence required. They helpfully left these questions blank (or wrote that no form exists) so that I could identify the flaws in my questionnaire. (Apparently the number of gaps was small enough that it did not raise their suspicions that defective words were exactly the *point* of the questionnaire.) In my discussions with these two people, they admitted that the genitive singular and the non-genitive plural forms of the relevant words are used.⁷⁶ The words simply are not used in the form that I was asking for. The fortuity of this failure of the survey is obvious. These informants identified exactly which words, in their opinion, have paradigmatic gaps.

All of the gaps that they identified were in genitive plurals. One participant left sixteen of the forty genitive plural frames blank – three of the ten control items (*παπουτσήs* / *paputsís* ‘shoe maker’, *βαγενάς* / *vaɣenás* ‘barrel maker’, *κορβανά* / *korvaná* ‘coffer’), two of the fifteen items in the same classes as gaps but prescriptively normally inflected (*χαράδρα* / *xaráðra* ‘ravine’, *ταβέρνα* / *tavérna* ‘pub’) and eleven of the fifteen prescriptive gaps (*ροτόντα* / *rotó(n)da* ‘rotunda’, *μουρμούρα* / *murmúra* ‘grumbling’, *κουλτούρα* / *kultúra* ‘culture’, *καμπάνια* / *ka(m)bánia* ‘campaign’, *νουβέλα* / *nuvéla* ‘novella’, *καρότσα* / *karótsa* ‘coach’, *κολόνια* / *kolónja* ‘cologne’, *σαμπάνια* / *sa(m)bánja* ‘champagne’, *λακκούβα* / *lakíva* ‘pothole’, *σακούλα* / *sakúla* ‘purse’, *κοπέλα* / *kopéla* ‘girl’) The other participant left ten genitive plural frames blank – two of the fifteen

⁷⁶ *βαγενάς* / *vaɣenás* and *κορβανά* / *korvaná* are possible exceptions. They received the lowest ratings on the familiarity pretest, and were outliers in this respect. Subjects seemed generally unhappy with the words, even apart from the status of the genitive plural. Thus, familiarity might have contributed to one subject’s refusal to make genitive plural forms.

items in the same classes as gaps (*πιτζάμα* / *pidzáma* ‘pajamas’, *καρέκλα* / *karékla* ‘doll’), and eight of the fifteen items which prescriptively have genitive plural gaps (*πραμάτεια* / *pramátja* ‘merchandise’, *ροτόντα*, *κουλτούρα*, *καμπάνια*, *νουβέλα*, *καρότσα*, *κολόνια*, *σαμπάνια*).

While the overlap between the prescribed gaps and the words that these two informants rejected is not absolute, there clearly is validity to the status of the prescribed gaps as actual gaps in people’s speech. But it suggests that the boundary between defective and non-defective lexemes may vary slightly from person to person.

5.2.2.3. Effects for intersubject agreement... and for defectiveness

Figure 17 compares confidence ratings and intersubject agreement. Each point represents a test item. The x-axis plots whether subjects agreed on the genitive plural form. For the present purposes, there is only one dimension of interest for agreement: stress shift or no stress shift. A score of 0.5 indicates that half of subjects produced the item with a stress shift, and half without. A score of 1 indicates that either all subjects produced the form with a stress shift, or all without it. The y-axis plots the average confidence ranks across subjects.

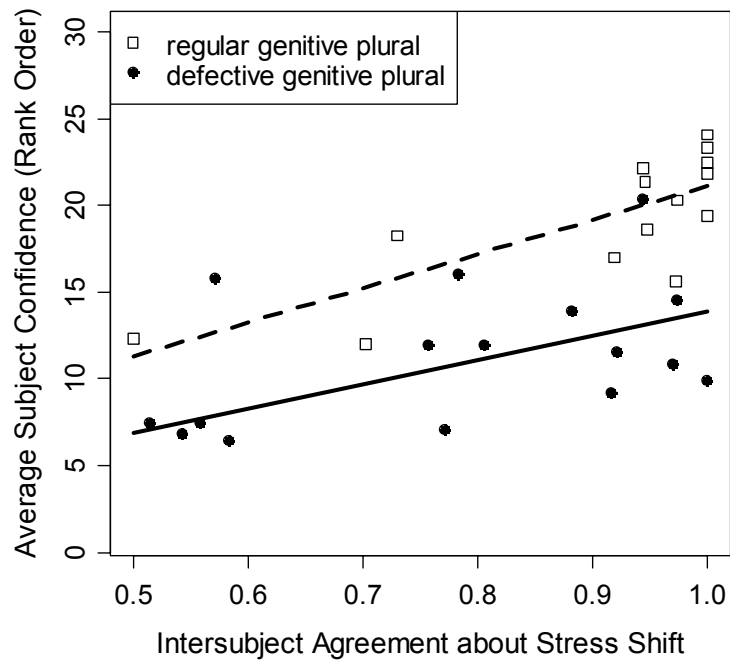


Figure 17: Parallel effects of agreement on confidence for defective and non-defective lexemes

There are several things to note in this figure. First, for both defective and non-defective lexemes, subjects' confidence ranks were positively correlated with intersubject agreement. The less subjects agreed on whether the genitive plural has a stress shift, the less confident each individual subject was that s/he had produced the “correct” genitive plural form ($F = 110.5$, $p < 0.001$ for regular genitive plurals, $F = 16.5$, $p < 0.001$ for defective genitive plurals, calculated by simple regression on the rank-transformed data). Under the assumption that speakers are likely to avoid forms which they have low confidence in producing, a positive correlation between intersubject agreement and

subject confidence is consistent with an explanation of gaps as morphological competition.⁷⁷ This aspect of the data matches Albright's results for Spanish.

However, unlike in Spanish, the Greek results also show an effect for defectiveness which cannot be reduced to stress agreement. First, while subjects were somewhat less likely to agree on the genitive plural form when presented with a defective lexeme than when presented with a non-defective one ($|t|=2.04$, $p=0.05$), Figure 17 shows that there were a number of defective lexemes for which all or nearly all participants produced the same genitive plural form. This runs contrary to what we would expect if genitive plural gaps actively result from an inability to predict the required inflected form.

Second and more importantly, *even within a given agreement range*, subjects had less confidence in defective lexemes than in non-defective lexemes. This shows that the bimodal distribution represented in Figure 16 is not epiphenomenal to intersubject agreement about the genitive plural form of defective vs. non-defective lexemes. Stated differently, Figure 17 confirms what Figure 16 seems to show: paradigmatic gaps and regularly inflected genitive plural forms are distinct categories, not two ends of a single continuous category. Defectiveness exhibits a correlation with subject confidence which is independent of agreement.

⁷⁷ There was also a main effect ($p<0.001$) for whether subjects produced a genitive plural form with or without a stress shift. Subjects were more confident in their productions when they produced a form without a stress shift (average confidence ranking 15.79, median 16.75), than when they produced a form with a stress shift (average 13.04, median 11.5). However, this was largely an artifact of the fact that non-defective lexemes were mostly produced without a stress shift. In a two-way ANOVA, stress shift does not account for a significant amount of variance in confidence ranks, once the effects of agreement are removed ($p=0.21$).

5.2.2.4. No effect for lexeme familiarity

To determine that there is a true effect of defectiveness on subject confidence, we must also eliminate the possibility that the bimodal distribution of confidence ranks is an artifact of subjects' familiarity with the test items.

Figure 18 plots the results of the familiarity judgment pretest against subjects' confidence in their genitive plural productions. On this scale, 6 = "I know this word and use it frequently", 5 = "I know this word and use it occasionally", 4 = "I know this word, but use it rarely", and 3 = "I know the meaning of this word, and have heard or seen it, but do not use it myself". The test items were presented in the nominative singular.

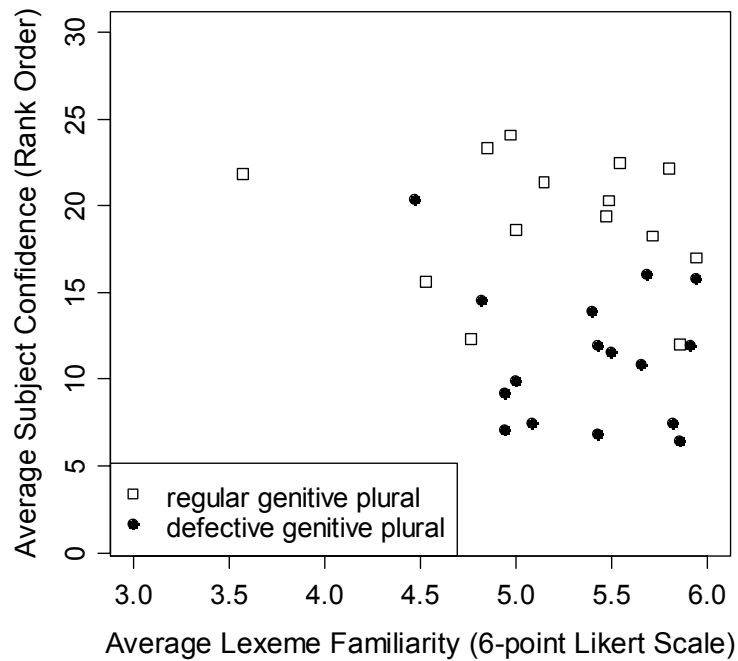


Figure 18: No effect of lexeme familiarity on confidence

Somewhat surprisingly, there was no effect of lexeme familiarity on subjects' confidence in their productions of the genitive plural ($F = 1.99$, $p = 0.16$ for defective lexemes, $F = 0.42$, $p = 0.52$ for non-defective lexemes, according to one-way ANOVAs).

Also, with the exception of the one non-defective lexeme which was given an aberrantly low familiarity rating, there is no significant difference in the reported familiarity of defective and non-defective stimuli ($p=0.67$ when lowest rated non-defective item is removed). This confirms that there is neither a main effect for lexeme familiarity on confidence, nor a significant possibility of an indirect effect as a result of defective and non-defective lexemes being differentially familiar.

5.2.2.5. Summary and analysis of interactions

The crucial result of this experiment is that while there is a positive correlation between intersubject agreement and subject confidence, there is an additional and independent correlation between defectiveness and subject confidence. A two-way ANOVA shows effects on confidence ranks for intersubject agreement ($F = 308.23$, $p<0.001$) and whether lexemes are defective ($F = 212.25$, $p<0.001$), and a much lesser but still significant effect for the interaction of agreement and defectiveness ($F = 13.36$, $p<0.001$). These values were calculated as a sequential sum of squares, with agreement as the first independent variable, and defectiveness as the second independent variable. This means that the F-statistic represents the amount of variation in the confidence ranks that can be explained by a binary categorization of lexemes as defective or non-defective *after* all of the variation which can be explained by intersubject agreement has been removed⁷⁸. Since

⁷⁸ There were no significant interactions between lexeme familiarity and either intersubject agreement or defectiveness.

defectiveness is robustly significant under these conditions, this suggests strongly that it produces its own effect on confidence.

It is not clear how the additive effect of agreement and defectiveness should be interpreted. One possibility is that there is a true effect, suggesting that how speakers react to lack of agreement over stress placement is influenced by whether they know that no form at all would be produced under normal speech conditions. Or, returning to the discussion of Figure 16, another possibility is that the perception of an effect is created by the crude method of categorizing lexemes as defective or not. Some subjects treated some supposedly defective lexemes as if they were normal verbs, and vice versa. Perhaps if we had a better measure of defectiveness, one which categorizes individual verbs on a subject-by-subject basis, the effect would be shown to be an artifact of the categorization method employed here. However, this sort of fine-meshed approach has to be left for future research.

Returning to the predictions made in Section 5.1, we can draw the following conclusions. The first condition is met – for all data there is a positive correlation between intersubject agreement and confidence for all data. However, the second condition is not met – defective and non-defective lexemes do not fall along a single continuum, and subjects treated them as two distinct groups. The status of a lexeme as defective or non-defective exhibited its own, independent effects on subjects' confidence when producing a genitive plural form, and that effect cannot obviously be reduced to any other fact of the morphological system (e.g., lexeme familiarity or intersubject agreement). We must therefore conclude that the genitive plural gaps in Modern Greek have an independent status in the lexicon.

5.2.3. Conclusions

The overall picture seems to be that despite the *availability* of synchronic motivation for the genitive plural gaps in Modern Greek, speakers fail to treat them as actively motivated. In the end, the distribution of the gaps is misleading regarding their synchronic motivation. The Greek gaps seem at first to result directly and actively from morphological competition, but a closer look at speakers' reactions shows that the gaps are actually lexically-specified defectiveness "disguised" as morphological competition.

These results contrast notably with those of Albright's study of Spanish. For Spanish, subjects treated prescriptively defective and non-defective lexemes as a single category. Thus, while the causal relationships represented in i) may be an accurate interpretation for Spanish, the relationships in ii) are supported for Modern Greek.

- i) low rule reliability/low agreement → low confidence → gaps (Spanish)
- ii) a. low rule reliability/low agreement → low confidence
b. gaps → low confidence (Modern Greek)

Yet the Greek subjects were sensitive to variability in morphological stress placement; low predictability of the genitive plural form did lead participants to be less confident in their predictions. This aspect of the study is fully consistent with the results of the forced choice task described in CHAPTER 4, which argued that Greek speakers avoid the genitive plural when its form is not predictable.

In the end, distributional data may tell us quite a lot about the history of a given set of paradigmatic gaps, but it does not necessarily provide the entire picture about their synchronic structure. Considering that previous accounts of paradigmatic gaps have often relied exclusively upon this sort of distributional data, the results of this study should lead us to rethink whether languages in which competing morphological patterns actively cause defectiveness are the rule, or the exception. If our goal is to model the synchronic structure of defectiveness, and if we believe that our model should be cognitively plausible, we need to set a higher burden of proof when claiming that paradigmatic gaps are synchronically motivated. Historically, the Modern Greek gaps are likely the result of competing morphological patterns. But synchronically they are not.

5.3. Reconciling opposing conclusions through principles of language change

Does this data present a conundrum for the model presented in CHAPTER 4? Based on the bulk of the data from that chapter, the best conclusion is that speakers actively avoid stress unpredictability and that this results in defectiveness, but based on data in this chapter, the opposite conclusion suggests itself. I argue that the contradictions are more apparent than real if we consider the nature of morphological systems, and principles of language change.

At issue are the structures which precipitate change, and the sorts of residue that changes leave in the grammar of a language. I formulate these as two principles, neither of which is particularly controversial.

- Principle 1: Reanalysis precedes restructuring. Restructuring reveals reanalysis.

Andersen (1973, 1978) has made this point forcefully with regard to abductive logic in analogy change – analogical change reveals a connection that speakers already had made between two partially overlapping patterns. But to demonstrate this point, I take the somewhat different example of periphrasis in Sanskrit. In Sanskrit the first person future may be realized either by a synthetic form (Table 32) or by what has traditionally been called a periphrastic form (Table 33).

	SINGULAR	PLURAL
1 ST P	dā-syā-mi give-FUT-1SG 'I will give.'	dā-syā-mas give-FUT-1PL 'We will give.'
3 RD P	dā-sya-ti give-FUT-3SG 'He will give.'	dā-sya-nti give-FUT-3PL 'They will give.'

Table 32: Select future forms for the Sanskrit verb 'give'—synthetic forms in 1st person

	SINGULAR	PLURAL
1 ST P	dātā asmi giver.MASC-SG COPULA.1SG 'I will give.'	dātā smas giver.MASC-SG COPULA.1PL 'We will give.'
3 RD P	dātā giver.MASC-SG 'He will give.'	dātāras giver.MASC-PL 'They will give.'

Table 33: Select future forms for the Sanskrit verb 'give'—"periphrastic" forms in 1st person

The forms in Table 32 are unquestionably single words. Note, however, that in Table 33 the first person plural form *dātā smas* inflects for plurality on only one of the two words. Plural marking on both parts would be expected based upon the third person plural form *dātāras*. The generalization is that when the copula is present, there is no number agreement on the form for ‘giver’, but when the copula is absent, there is number agreement on that form. Contrary to its description as a periphrastic construction, *dātā smas* best meets the criteria of being a single word unit. Distributed exponence is a typical characteristic of morphological phenomena (Zwicky 1990), so if *dātā smas* is treated as a single word, plural marking on only *smas* and not also on *dātā* is to be expected. If we were to treat the first person forms in Table 33 as syntactically generated constructions, we would have difficulty capturing that plural marking applies to only one form, in light of marking on third person forms.

Here it must logically be the case that change reveals prior reanalysis. At some point in the history of the language, Sanskrit speakers must have reanalyzed the periphrasis as a single word rather than a phrasal construction. We can assume that speakers induce changes which make morphological structures more canonically morphological, syntactic structures more canonically syntactic, etc. Logically, then, the reanalysis must have occurred *prior* to the time at which speakers stopped inflecting both of the component parts for plurality. This in turn opened the constructions up to the loss of inflectional marking, making the structure more typically morphological. However, we only have evidence of such a reanalysis when the subsequent change occurs.⁷⁹

⁷⁹ Langacker (1977) calls this kind of reanalysis that is not immediately apparent from surface structure *covert change*.

The same point can be made for phonemic split. In phonemic split, two processes apply: loss of the conditioning environment for two allophones of the same phoneme, and reanalysis of these allophones as separate phonemes. The question is the order in which these processes apply. Twaddell (1938) argues, based on the split of [ü] and [ö] into separate phonemes in Old High German, that the loss of conditioning environment (and thus loss of complementary distribution), triggers reanalysis of allophones as separate phonemes. However, as Janda (2003:409) notes, “...there is a logical problem here; if the front-rounded phones... were allophonically conditioned..., then loss of such triggers should have been accompanied by loss of the fronting effect which they conditioned... phones such as [ü(:)] and [ö(:)] must have become phonemic... before reduction or loss of [i(:), j]”, the conditioning environment. He thus argues that the reanalysis of [ü(:)] and [ö(:)] as the phonemes /ü(:)/ and /ö(:)/ must have preceded the loss of conditioning environment, although much of the tradition of generative linguistics has inherited Twaddell’s argument. Moreover, the argument that reanalysis must necessarily take place prior to loss of the conditioning environment also entails that some phonemes are “in disguise” as allophones – because the phonemes are still in complementary distribution. This is parallel to the argument made in this chapter for Modern Greek genitive plural gaps.

- Principle 2: Morphological change tends to leave behind remnants which are no longer motivated by the synchronic structure of the language.

Irregular verbs are an example of Principle 2. There is a tendency for irregular verbs to have high token frequency. In many cases, these verbs represent previously productive patterns; their irregularity in the modern language is the result of their having been stranded when lower frequency verbs underwent analogical change (Hock 1991). If the number of stems belonging to that inflection type is sufficiently reduced, the pattern ceases to be an active product of the generative system. And again, the fact that high frequency verbs tend to be resistant to analogical change shows us that the structure of those forms differed from the structure of forms with lower frequency in a way which was not obvious until the later change happened.

These principles help to explain the apparent discrepancy in the Greek data. They tell us that structures which appear to be productive in a language, including productively derived defectiveness, may or may not in fact be as they appear. The data presented in this chapter hints that a (partial?) reanalysis of the Greek gaps has taken place. The gaps have gone from being synchronically motivated by the stress pattern to being at least in part divorced from that motivation. This entails a narrowing of the generalization from one which sweeps through the entire class and probabilistically identifies gaps based on paradigmatic competition and other factors to one which lexically marks a particular paradigm cell as defective. This is the essence of lexicalization. The only real difference between analogical change, Sanskrit periphrasis, German phonemic split and Greek paradigmatic gaps is that in Greek, the gaps have not (yet) been stranded by some subsequent change that reveals their reanalyzed status.⁸⁰

⁸⁰ My analysis predicts that if Greek were to undergo widespread stress leveling in the genitive plural, the gaps would nonetheless persist. Stress leveling would be like the rise of distributed exponence in Sanskrit. It would reveal the reanalysis that I claim has already taken place. While there is no concrete evidence that

Critics might contend that there is no motivation for a language learner to make a series of small, idiosyncratic generalizations when they could posit a single generalization which covers more examples in a motivated way. And in some sense this is true. Yet large generalizations often do fracture into smaller ones over time. For example, Janda (1982) surveys umlauting in German. Umlauting is widespread in the inflectional system, and there are tantalizing similarities, both in terms of conditioning environment and grammatical effect, which led Lieber (1980) to put forth a unified treatment of German umlaut. However, Janda demonstrates that on close inspection, umlauting processes overlap in their conditioning environments and effect but are nonetheless sufficiently different that they cannot be collapsed and still provide empirically adequate coverage. The parallelism between the umlauting rules in German

I am aware of, there are three facts that hint that Greek may currently be undergoing a stress leveling in the genitive plural of nouns.

First, the Greek language has a history of stress leveling in adjectives. Adjectives in Modern Greek inflect for case and number, just as nouns do, and additionally inflect for gender. Adjectives and nouns used to have parallel stress shifts towards the end of the word in the genitive plural and sometimes in the genitive singular and accusative plural as well.⁸⁰ However, stress in adjectives has mostly been leveled in favor of the predominant (non-genitive) pattern (Holton et al. 1997, Jannaris 1987). This loss of distinctive genitive plural stress for adjectives has been completed at least since the nineteenth century (Brian Joseph, p.c.) and contrasts with the pattern for nouns which, for whatever reason, by comparison remained close to the patterns inherited from Ancient Greek.

Second, subjects in the production task did not always mark stress in the nouns according to prescriptive patterns. Of the eight nouns expected to show a stress shift in the genitive plural according to the LKN, only five did to any significant degree, and only one noun was consistently produced (> 90% of responses) with a stress shift. Considering that there were no cases of speakers claiming that prescriptively non-shifting nouns did have a stress shift, the tendency is clearly for stress to be columnar more often than dictionaries describe. This is certainly not definitive proof of change in progress. After all, semi-prescriptive sources like dictionaries do not necessarily accurately reflect usage – current or previous. Still, this pattern should make us wonder whether there is an ongoing leveling of the stress pattern in nouns, especially in light of what has already happened for adjectives.

Finally, this is a likely time for a stress shift from a sociolinguistic standpoint. Katharevousa, the formerly high diglossic variety of Modern Greek, emphasized forms closer to the pattern of Ancient Greek, and was taught to all schoolchildren. As I speculated in Section 4.1, this may have had a stabilizing influence on the genitive plural form. All of the subjects in this study, however, were educated (and mostly born) after the end of the diglossic era. While we can never predict language change with any certainty, the raising of the status of the low variant in 1976 makes the generation that my subjects represent a likely one to promulgate a stress leveling. Together, these facts make it possible, perhaps even likely, that some of the genitive plural forms which subjects listed with columnar stress previously had shifting stress.

presumably results from a fracturing of a single generalization over time. This supports a view of language as fundamentally a system of small-scale generalizations. It may include large-scale generalizations of the type that linguists prefer to investigate, but Janda and Joseph (1999) among others hypothesize that these are not the types of rules that drive linguistic systems.

In the end, understanding of language change gives us a way to explain both the distribution of the Greek gaps, which coincides so well with the presence of a variable morphophonological alternation, and speakers' responses in the production and ratings task. Expected but non-attested forms have long fascinated morphologists because they seem to defy the productivity of language. However, we must be wary of the explicit or implicit assumption that paradigmatic gaps must have language-internal, synchronic explanations (Baronian 2005, Hudson 2000, Rice 2005). A shift to gaps being lexically-specified information does not negate evidence of avoidance strategies and the distributional pattern. Avoidance strategies and distributional evidence demonstrate that there is necessarily a historical connection (or stated differently, that at a point in history there was a synchronic connection), but only possibly a current connection.

5.4. Summary

In this chapter I argued that while the Greek gaps likely arose from paradigm (non)predictability, a production and ratings experiment provides evidence that the genitive plural gaps having been at least in part reanalyzed as lexeme-specific facts. I drew parallels to other phenomena in which historical changes have revealed prior reanalyses of morphological and phonological structure, and argued that the only

substantial difference between Greek and these cases is that stress leveling, which could reveal the reanalysis, has not yet occurred in Greek. As a result, I reject the implicit claim of much of the recent literature that gaps must have some grammar-internal causation in order to be generationally stable.

CHAPTER 6

THE CLASSIC MYSTERY OF THE RUSSIAN FIRST PERSON SINGULAR

NON-PAST GAPS

In this chapter, I look at a famous case of paradigmatic gaps – those in the first person singular non-past of Russian verbs. These gaps have mystified researchers for two reasons. First, the distribution of the gaps is closely tied to the distribution of a morphophonological alternation, a pattern which should be familiar by now from Greek and Spanish among other languages, but in Contemporary Standard Russian the alternation applies uniformly within its conditioning environment. This seems to remove any possibility of explaining the Russian gaps via a paradigm predictability model, or any other morphology-internal explanation. Second, when speakers are forced to “fill” gaps, they reportedly sometimes produce forms according to patterns that are not attested for that cell in productive verbs (Baerman and Corbett 2006).

I explore the empirical facts surrounding the alternation. Does the alternation apply as uniformly as the standard language suggests? Do speakers’ productions of filled defective lexemes differ from morphological patterns found among productive forms? And if (contrary to the standard language) there is variation in speakers’ productions, does it follow the patterns that we expect if the gaps are synchronically motivated by paradigm competition? In the end, I argue that the paradigmatic gaps may not have a

single explanation. Similarities between some defective and non-defective lexemes allow the possibility that a paradigm predictability account can be formulated as synchronic motivation for some gaps. But differences also suggest that other gaps have been lexicalized. They also reveal paradigmatic connections that are not evident from productive forms alone.

The data at the heart of this chapter comes from a forced production experiment similar to the one I describe in CHAPTER 5 for Greek. Historical information, dictionary entries, and corpus statistics flesh out the conclusions drawn from the experiment. As with the Greek, however, my analysis cannot be understood without a global view of the inflectional facts of Russian verbs, so I begin there.

6.1. Overview of verbal inflection

Russian has a set of inflectional forms which are best described morphologically as the non-past tense, and semantically as either the present tense or future tense, depending on aspect.⁸¹ This pattern is illustrated in Figure 19. The mismatch between semantics and morphological form is relevant here insofar as gaps affect morphologically non-past inflections, regardless of whether the verb is semantically future or present tense.

⁸¹ A different inflectional pattern is used for the future tense of imperfective verbs. There are no forms at all for present tense perfective verbs because the meaning expressed via perfective forms, at its most basic a one-time completive sense, is incompatible with the meanings expressed via present tense forms, at the most basic signifying ongoing or generic action.

IMPERFECTIVE	SINGULAR	PLURAL	<div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> <div>←</div> 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Figure 19: Semantic/morphological mismatch in Russian verbal inflection (*красть/украсть* ‘to steal’)

Verbs are traditionally divided into two primary conjugation classes, 1st and 2nd, according to their non-past inflectional patterns. The primary differences between the 1st and 2nd conjugation are the third person plural morph, and the theme vowel – /e/ or /o/ in the 1st conjugation, and /i/ in the 2nd. The examples above belong to the 1st conjugation class; the example in Table 34, ‘to decide (perfective)’, belongs to the 2nd conjugation class. Russian verbs usually come in aspectual pairs (imperfective/perfective), for

instance *красть* / *krast'* 'to steal (imperfective)' and *украсть* / *ukrast'* 'to steal (perfective)', but paired forms do not necessarily belong to the same conjugation class.

'to decide'	SINGULAR	PLURAL
1ST P.	решу / re[š]u	решим / re[š]im
2ND P.	решишь / re[š]iš'	решите / re[š]ite
3RD P.	решит / re[š]it	решат / re[š]at

Table 34: Example of the 2nd conjugation non-past inflectional pattern of Russian

Morphophonological alternations and other differences define a variety of subclasses. For example, and relevant for the present purposes, the 2nd conjugation class has a palatalizing alternation that affects stems ending in dental sounds (henceforth, *dental stems*). The sounds [d^j] or [z^j] at the end of the stem in the non-first-person-singular forms correspond to [ž] in the first person singular, [t^j] likewise alternates with [č] or occasionally [š], [s^j] alternates with [š], and [st^j] alternates with [š].⁸² This alternation applies uniformly in the standard language. There are no words which fail to alternate if they meet the relevant criteria, although there is the minor variation in the form of the alternation for stems ending in /t/.

⁸² There is also a palatalization process for stem-final labials, as well as various other kinds of alternations in both the first and second conjugations. These other patterns are not relevant for the present purposes, however.

‘to see’	SINGULAR	PLURAL	‘to carry’	SINGULAR	PLURAL
1 ST P.	вижу / vi[ž]u	видим / vi[dʲ]im	1 ST P.	ношу / no[š]u	носим / no[sʲ]im
2 ND P.	видишь / vi[dʲ]išʹ	видите / vi[dʲ]ite	2 ND P.	носишь / no[sʲ]išʹ	носите / no[sʲ]ite
3 RD P.	видит / vi[dʲ]it	видят / vi[dʲ]jat	3 RD P.	носит / no[sʲ]it	носят / no[sʲ]jat

‘to cry’	SINGULAR	PLURAL	‘to lower’	SINGULAR	PLURAL
1 ST P.	плачу / pla[čʲ]u	платим / pla[tʲ]im	1 ST P.	спущу / spu[šʲ]u	спустим / spu[stʲ]im
2 ND P.	платишь / pla[tʲ]išʹ	платите / pla[tʲ]ite	2 ND P.	спустишь / spu[stʲ]išʹ	спустите / spu[stʲ]ite
3 RD P.	платит / pla[tʲ]it	платят / pla[tʲ]jat	3 RD P.	спустит / spu[stʲ]it	спустят / spu[stʲ]jat

Table 35: Stem-final palatalization in the 2nd conjugation first person singular non-past

This contrasts with the relevant facts of Modern Greek and Spanish, as presented in CHAPTER 5 and CHAPTER 2, respectively, in which words that were for all relevant purposes identical were realized sometimes with a morphophonological alternation, and sometimes without it.

The dental stems also have an alternation in the past passive participle. Examples are given in (28). Superficially, this alternation seems to be connected to the alternation in the first person singular non-past – the same morphological subclass is affected in both cases, and the alternation is usually the same in both cells. Note, however, that there is one alternation in the participle that does not exist in the first person singular forms, namely /dʲ/ ~ /ždʲ/. The Russian cases thus seem much more like the fractured morphological generalizations that Janda (1982) discusses for German umlauting (see Section 5.3). I return to this point later, where I show that this alternation creeps into the

first person singular form when speakers are forced to produce stems that normally have paradigmatic gaps, and only for these stems.

(28) Parallelism, and non-parallelism, between alternations in the first person singular and the past passive participle

	INFINITIVE	1 ST SING	PAST PASSIVE PART.	GLOSS
tʲ ~ čʲ	опла <u>т</u> ить oplatitʹ	опла <u>ч</u> у oplaču	опла <u>ч</u> ен oplačen	‘to pay’
tʲ ~ šʲ	сокра <u>т</u> ить sokratitʹ	сокра <u>щ</u> у sokrašču	сокра <u>щ</u> ен sokraščen	‘to shorten’
dʲ ~ ž	заря <u>д</u> ить zarjaditʹ	заря <u>ж</u> у zarjažu	заря <u>ж</u> ён zarjažon	‘to load’
dʲ ~ ždʲ	освобо <u>д</u> ить osvoboditʹ	освобо <u>ж</u> у osvobožu	освобо <u>жд</u> ён osvoboždjon	‘to become free’
sʲ ~ š	приглас <u>и</u> ть priglasitʹ	приглас <u>я</u> у priglašu	приглас <u>я</u> ён priglašon	‘to invite’
zʲ ~ ž	загру <u>з</u> ить zagruzitʹ	загру <u>ж</u> у zagružu	загру <u>ж</u> ён zagružon	‘to load’

The 2nd conjugation also has subclasses without morphophonological alternations in the first person singular (and past passive participle). These include but are not limited to stems ending in palatal sounds ([š], [ž] or [čʲ]). As in the example *реши́ть* / *rešitʹ* ‘to decide’, they have the same stem shape throughout the non-past paradigm.

‘to scream’	SINGULAR	PLURAL
1 ST P.	кри <u>ч</u> у / kri[čʲ]u	кри <u>ч</u> им / kri[čʲ]im
2 ND P.	кри <u>чи</u> шь / kri[čʲ]išʹ	кри <u>чи</u> те / kri[čʲ]ite
3 RD P.	кри <u>чи</u> т / kri[čʲ]it	кри <u>ча</u> т / kri[čʲ]at

Table 36: Non-alternation in the 2nd conjugation non-past

6.2. The distribution of first person singular gaps

While Russian differs from Spanish and Modern Greek in that the alternations presented in Table 35 always apply in the standard language when the conditions are met, it also resembles those languages in that the distribution of paradigmatic gaps is closely tied to the distribution of the alternation (first mentioned in the theoretical linguistics literature by Halle (1973)). Russian has approximately 70 distinct roots with gaps in the first person singular non-past,⁸³ and the vast majority of the affected verbs belong to the class of dental stems. For example, we would expect the verb *дерзнуть* / *derzit'* 'to be imprudent' to have a form *держу* / *deržu* 'I am imprudent', but according to several dictionaries and grammars, there is no acceptable first person singular non-past form.

'to be imprudent'	SINGULAR	PLURAL
1 ST PERSON	*	дерзим / derzim
2 ND PERSON	дерзишь / derziš'	дерзите / derzite
3 RD PERSON	дерзит / derzit	дерзят / derzjat

Table 37: Paradigmatic gap in the 1st person singular non-past

The full list of gaps, as culled from nine dictionaries and grammars (Avanesov 1983, Barxudarov et al. 1963, Graudina 2001, Okuntsova 2004, Ožegov 1972, Rozenhal 1966, Švedova 1982, Ushakov 1974, Zaliznjak 1977), is given in APPENDIX D. In (29) are the verbs which these sources most commonly cite as having paradigmatic gaps in the first person singular non-past form.

⁸³ Halle (1973) claims that there are approximately 100 gaps, but I could reach this number only by counting two citation forms sharing the same root as separate entries. He does not provide a list.

(29) Paradigmatic gaps in the first person singular non-past of Russian verbs

бдеть	bdet'	'to keep watch'
бuzить	buzit'	'to protest'
галдеть	galdet'	'to make a hubbub'
дерзить	derzit'	'to be imprudent'
дудеть	dudet'	'to play the pipe'
ерундить	erundit'	'to do stupid or funny things'
затмить	zatmit'	'to eclipse'
кудесить	kudesit'	'to do magic'
очутиться	očutit'sja	'to find oneself; to come to be'
победить	pobedit'	'to win'
рысить	rysit'	'to trot'
соседить	sosedit'	'to be a neighbor'
убедить	ubedit'	'to persuade'
умилосердить	umiloserdit'	'to take pity on'
чудесить	čudesit'	'to do magic'
чудить	čudit'	'to behave in a weird way'
шкодить	škodit'	'to misbehave'

All of these verbs belong to the 2nd conjugation class. All except *затмуть* / *zatmit'* 'to eclipse' are dental stems, and would thus be expected to have a palatalization in the first person singular form. And some of these, especially *победуть* / *pobedit'* 'to win' and *убедуть* / *ubedit'* 'to persuade', are commonly used lexemes.

Using data from the Russian National Corpus (RNC),⁸⁴ we can confirm that in general, speakers treat these lexemes as being defective in the first person singular non-past cell. Grammars of Russian typically identify at least four types of verbs which significantly differ in how frequently the various non-past person-number combinations are used. These are exemplified in Table 38 using counts from the RNC.

⁸⁴ *Russian National Corpus*: www.ruscorpora.ru, with a mirror available at corpus.leeds.ac.uk/ruscorpora.html. Counts were collected in May 2006. At that time, the RNC sample available at Leeds contained appx. 77.6 million tokens.

Pattern	Example		1sg	2sg	3sg	1pl	2pl	3pl	Total
“normal”	<i>учиться / učit'sja</i> ‘learn’	#	967	263	2037	484	427	1952	6130
		%	15.8	4.3	33.2	7.9	7.0	31.8	100
impersonal	<i>вериться / verit'sja</i> ‘(cause to) believe’	#	0	0	1301	0	0	0	1301
		%	0	0	100	0	0	0	100
3 rd only	<i>увеличиться / uveličit'sja</i> ‘to increase’	#	0	0	1683	0	0	416	2099
		%	0	0	80.2	0	0	19.8	100
defective 1sg	<i>победить / pobedit'</i> ‘to win’	#	4	104	1416	385	35	344	2288
		%	0.2	4.5	61.9	16.8	1.5	15.0	100

Table 38: Four relative frequency patterns for non-past Russian verbs

First, by far the most common pattern is for verbs to be relatively well attested in all six person-number combinations (henceforth, *normal verbs*). Often for these verbs the 3sg is the most frequent form, followed by the 3pl and the 1sg (see *учиться / učit'sja*), but there is some variation in this regard. Second, Russian has a variety of impersonal verbs; impersonals are used only in the 3sg because they agree with a silent expletive subject which is third person singular neuter (Perlmutter and Moore 2002).⁸⁵ Third, there are verbs that are used only or overwhelmingly in the third person (singular or plural) for semantic reasons. Finally, defective verbs are used with the same general distribution as normal verbs in five person-number combinations, but rarely in the 1sg.

Note that the 1sg of defective verbs is not necessarily *completely* missing – there are four attestations of the 1sg of *победить / pobedit'* in the RNC sample, for example.

⁸⁵ Russian impersonal constructions describe weather conditions; a physical, mental or emotional state; a state caused by external force; etc. For example (ia) contains the impersonal verb *rabotat'sja* ‘work’. Compare it with the related normal verb *rabotat'* in (ib).

- (i) (a) Borisu ne rabotaetsja doma.
Boris-DAT.SG not work-3SG-REFL at.home
‘Boris can’t seem to work at home.’ (example from Perlmutter and Moore (2002:628))
- (b) Boris ne rabotaet doma.
Boris-NOM.SG not work-3SG at.home
‘Boris doesn’t work at home.’

However, this is not sufficient to claim that the 1sg is not defective. As discussed in CHAPTER 1, relative frequency (percentage of total lemma frequency) should be considered more important than absolute frequency, and the relevant comparison is between relative frequency of the (proposed) gap, and the average relative frequency of that paradigm cell for normal verbs.

For this measure, compare the histograms in Figure 20 (normal verbs) and Figure 21 (defective verbs). Each histogram represents the relative frequency distribution for one person-number combination in the non-past tense. Relative frequency was calculated by dividing the number of attestations of a given person-number combination in the non-past tense by the total number of non-past attestations on a lexeme-by-lexeme basis. Each bar represents a range of approximately 2% relative frequency. In these figures, I included only verbs which had a total non-past frequency in the Russian National Corpus greater than 37 instances, so as to minimize sampling errors.

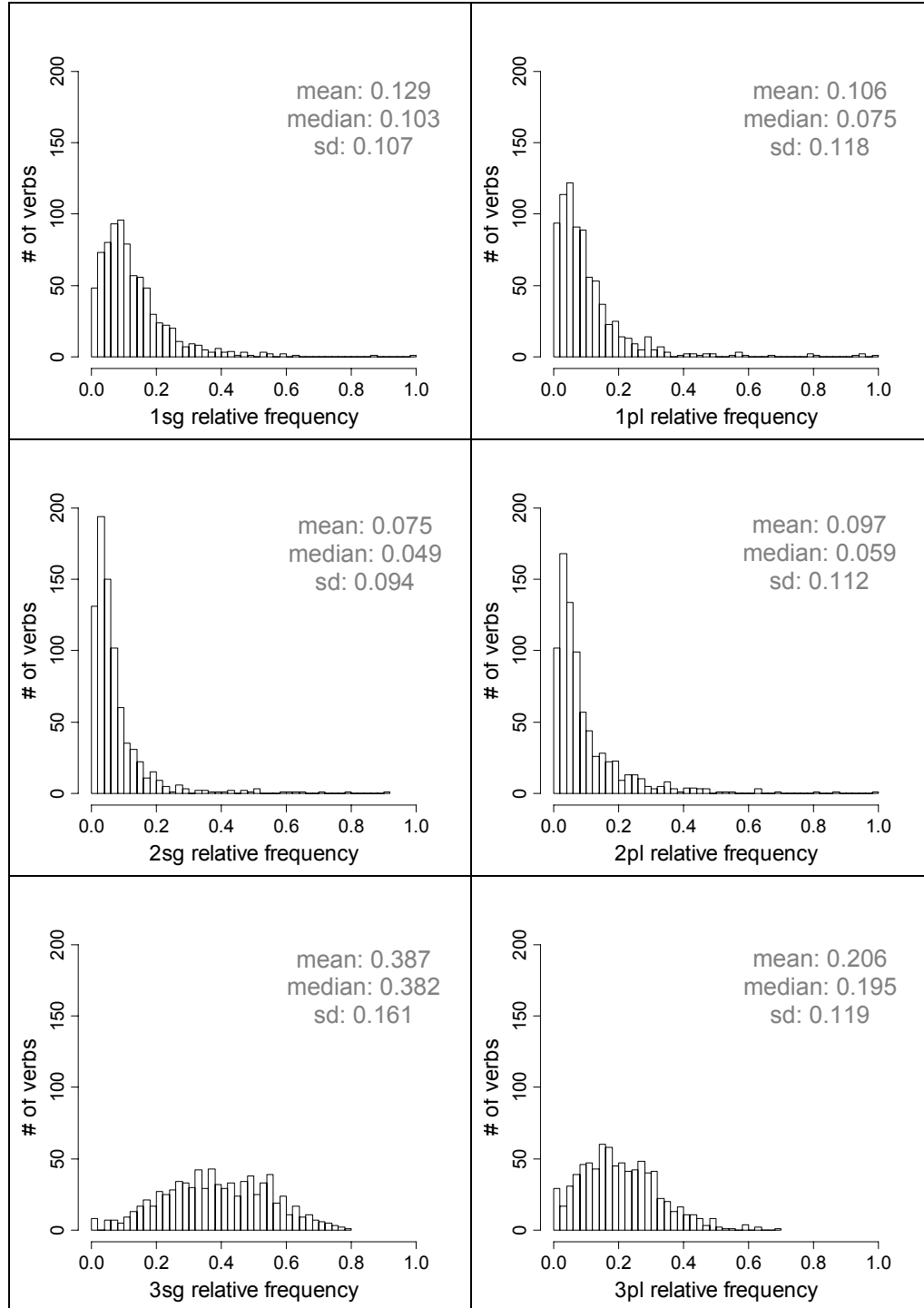


Figure 20: Histograms of the relative frequency of person-number combinations: Normal verbs (N=797)

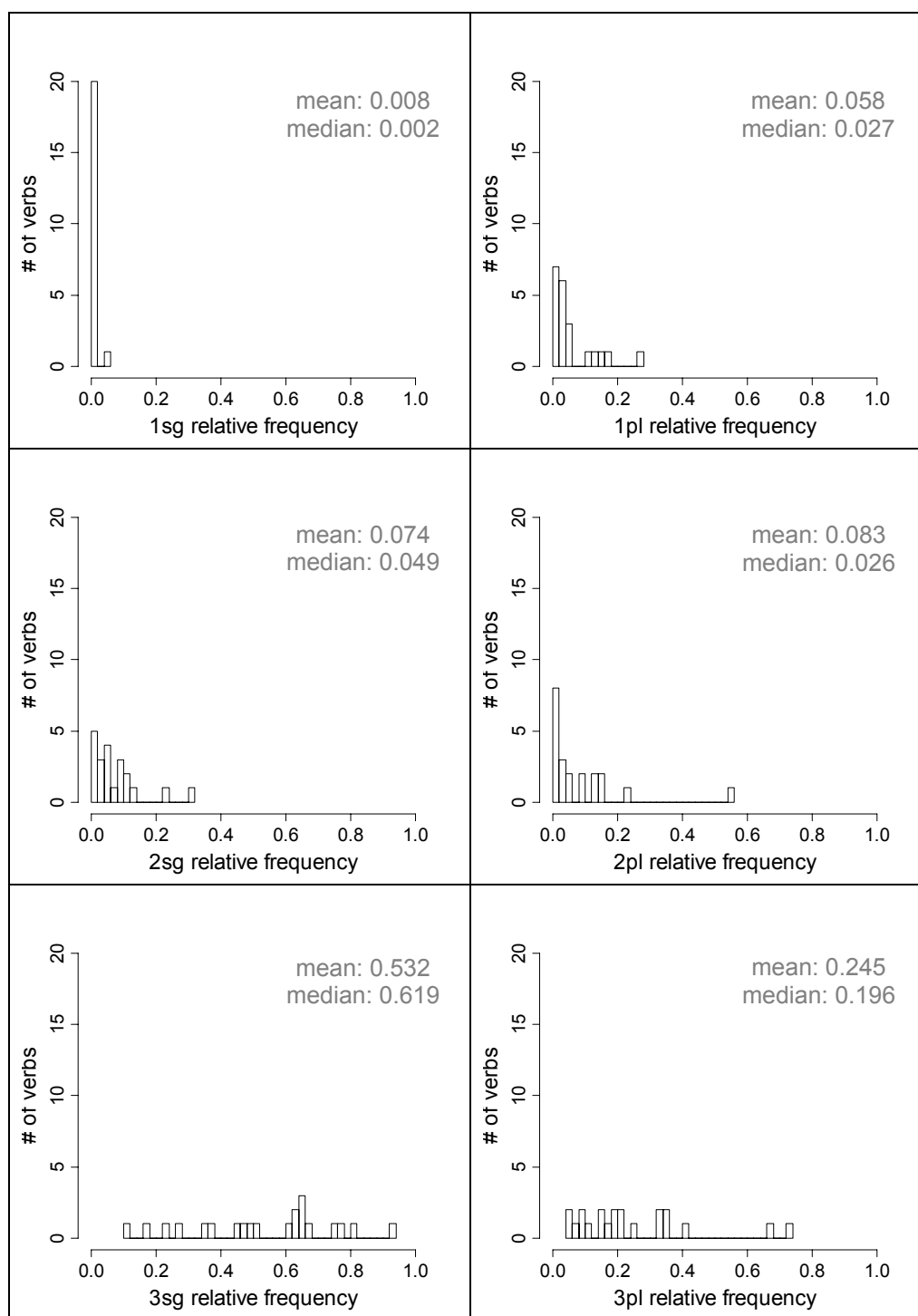


Figure 21: Histograms of the relative frequency of person-number combinations: Verbs with prescribed 1sg gaps (N=21)

Notice that the relative frequency of any given person-number combination can be described in terms of a distribution around a mean. For a normal verb, the average relative frequency of the 1sg cell is 12.9%. For lexemes with prescribed first person singular non-past gaps, the average relative frequency of this cell is 0.8%. Based on the differences in the distributions, we can conclude gaps as listed in dictionaries are a reasonable representation of patterns of use in Russian. At least as characterized in the Russian National Corpus, Russian speakers rarely use the first person singular form of defective verbs.

Finally, before moving on to the issue at hand, we should eliminate from consideration five common native-speaker reactions to, and attempted explanations for, the Russian 1sg gaps: semantics, homophony avoidance, repetition avoidance, phonotactics, and politeness.

1) A few of the defective Russian verbs are unlikely to be used in the first person singular for semantic reasons (e.g., *рысунть* / *rysit* 'to trot'). However, most have no semantic problems. It is unclear why verbs unlikely to be used in the first person are treated as having 1sg gaps, but these constitute only a handful of examples.

2) Švedova (1982) suggests that gaps result from homophony avoidance, e.g., *ладить* / *ladit* 'to be on good terms with' and *лазить* / *lazit* 'to climb' both would have the first person singular non-past form **лажу* / **lažu*, and some dictionaries list both as having 1sg gaps. Linguistically naive speakers also often cite this issue. However, there are other homophonous forms which are unproblematic, and speakers in general do not seem to be bothered by either lexical or grammatical homophony (syncretism).

3) With particular reference to **očučus*’ and **oščušču*, speakers will claim that the word is “neblagozvučno” (not melodious) because of the repetition of the syllables *ču* or *šču*. But again, there are far more words which repeat syllables, or nearly do so (e.g., *ljublju* ‘I love’), and which are well-formed.

4) The verbs *бдѣть* / *bdet*’ ‘to keep watch’ and *чтитъ* / *čtit*’ ‘to honor’ have the expected 1sg forms **бѣжу* / **bžu* and **ччу* / **čču*. These onsets are not allowed in Russian. This fact may provide an explanation for these two forms (although we still have to wonder why no repair strategy applies), but cannot account for the remaining dozens of defective verbs which are phonotactically licit.

5) Finally, with particular reference to **нобѣжу* / **pobežu* (which is the most famous of all the gaps), Russians sometimes explain that it is simply impolite to brag of one’s future victory, so the future 1sg is avoided. Yet the near synonym *вызрѣть* / *vyigrat*’ ‘to be victorious’ (1sg *вызрѣю* / *vyigraju* ‘I will be victorious’) is not defective.

In short, any of these proposed explanations can, at best, account only a handful of examples, and even collectively they account for fewer than half of the 1sg gaps. They also fail to explain why virtually all of the gaps belong to dental stems. I therefore consider these possibilities to be folk explanations, and will not discuss them further.

6.3. Questions

The distributional data leave little doubt that the Russian 1sg gaps are an empirically observable phenomenon, and not only a prescriptive one. And the fact that the gaps exactly parallel the distribution of a morphophonological alternation raises the same suspicion as in Modern Greek and Spanish, that the gaps are somehow caused by that

alternation. But at the same time, as Baerman and Corbett (2006) argue, the fact that all productive verbs of the relevant type have palatalization in the first person singular in the standard language leaves little room for the gaps to be explained as the result of competition between inflectional rules. In fact, there is no obvious synchronic motivation for the gaps at all, since morphophonological alternations are not in general problematic.

This leaves a simple but important question in connection with the Russian data: What are the actual facts of language use with regard to the palatalizing alternation among dental stems? There is anecdotal evidence, cited specifically by Baerman and Corbett, that when forced to produce first person singular non-past forms for stems usually having paradigmatic gaps in this cell (“filled gaps”), Russian speakers sometimes use forms without an alternation, for example *derzʲu* ‘I am imprudent’ or *pobedʲu* ‘I will win’, instead of *deržu*, or *pobežu*, as would be expected based upon non-defective verbs. I call this *unexpected non-alternation*. Does unexpected non-alternation represent a broader trend, evident not only in forced production of a form where there is ordinarily a gap, but also in regular, fully productive verbs? In other words, does the standard language provide an accurate picture of language use? If not, there may be a basis for claiming that the gaps are synchronically motivated by grammatical structure after all.

The Russian verbal gaps are frequently remarked on in the literature on inflectional defectiveness (minimally, Albright 2003, Baerman and Corbett 2006, Baronian 2005, Fanselow and Féry 2002, Halle 1973, Hetzron 1975, Iverson 1981, McCarthy and Wolf 2005), but in these studies the Russian data has been limited to less than the basic distributional information given above. There are no studies of speaker behavior, such as whether speakers produce the expected but unattested form as easily as

they do non-defective forms. The ability of speakers to produce the expected form but then reject it anyways has fascinated researchers because it suggests a parallelism between gaps and regularly inflected forms. It has also driven some proposals for describing paradigmatic gaps, such as CONTROL (Orgun and Sprouse 1999), a feature of Optimality Theory. According to CONTROL, all forms are generated by the same mechanism (GEN), and words that correspond to gaps are later rejected by a surface filter. According to Orgun and Sprouse, when speakers are forced to fill the gap, they simply ignore the surface filter.

The CONTROL model predicts that filled gaps will follow productive inflectional rules. Grammar competition models in the vein of Albright (2003) make the same prediction. What form speakers choose to use when forced to fill a gap thus has significant theoretical consequences. Perhaps surprisingly, then, no research has given detailed attention to the depth of this parallelism in general, and the details of the Russian data in particular.

6.4. An experiment on speaker confidence and unexpected non-alternation⁸⁶

This study was inspired by the work of Baerman and Corbett (2006), who claim that variability in the morphophonological alternation in the first person singular non-past of Russian verbs may have originally provided motivation for gaps in that cell, but this variability historically disappeared – the alternation seen in Table 35 became the uniform standard. Subsequent to that change, gaps spread analogically based on the stem final consonant. Their position is enticing in light of the similarities and difference between

⁸⁶ I am very grateful to Bryan Brookes and especially Maria Alley, who worked with me to develop and execute this experiment. It would have been much poorer without their work and their ideas.

Russian, Spanish, and Modern Greek, but they present only anecdotal data regarding the modern structure of the 1sg gaps, and the relationship of the gaps to inflectional structure. The experiment presented in this section expands the available data; it has a similar methodology to the one used in CHAPTER 5 for Modern Greek.

6.4.1. Predictions

Following Baerman and Corbett, I would expect to find evidence that gaps pattern distinctly from non-defective stems, showing that defectiveness does not actively, synchronically result from competition between inflectional patterns.

Consider four different types of stems: (a) stems with prescribed gaps in the first person singular non-past, (b) stems which meet all of the structural criteria for having gaps in this cell, but which prescriptively have normally inflected forms (see Table 35 on page 158; henceforth *non-defective dental stems*), (c) words that are not dental stems, but which belong to the same inflection class (see Table 34 on page 157, henceforth *palatal stems*), and (d) stems belonging to an entirely different inflection class, namely, the 1st conjugation (see Figure 19 on page 156). These types represent an ordinal scale with four levels, representing increasing difference from defective stems: (a) is maximally close, being defective, and (d) is maximally far, not meeting any of the criteria for having gaps. I make two major predictions with regard to the speakers' reactions to these different types of stems in a forced production and confidence ratings task.

- Prediction 1: Interspeaker Agreement: In forced production, speakers will produce defective and non-defective dental stems with different types of morphophonological (non)alternations.

As described above, this prediction is inconsistent with both the CONTROL component and Albright's competition model. It is consistent, however, with the view that the gaps are lexically specified, since lexical specification makes no a priori assumptions that forced production of filled gaps would be subject to regular inflectional rules (although it certainly does not exclude the possibility either). More importantly, if we find that defective stems are produced according to inflectional patterns that do not normally occur in the 1st person singular, but do occur elsewhere in the paradigm (e.g., in the past passive participle), this is support for paradigmatic connection between those cells at some level of structure.

- Prediction 2: Speaker Confidence: Defective and non-defective lexemes will have independent effects on speaker confidence. Speakers will report lower confidence in forms that correspond to gaps than in any type of non-defective forms, all else being equal. (gap → lower confidence)

This reverses the prediction of Albright's (2003) model, and is in line with the results of the Greek production study, which showed that those gaps are not as closely tied to the stress alternation as other data would suggest. If this prediction is supported, and stems with gaps pattern differently from non-defective dental stems, this will demonstrate that

gaps cannot be reduced to the structure of the morphophonological alternation (regardless of whether prediction 1 is upheld). If the prediction is wrong, this would potentially implicate the morphophonological alternation as causative of the gaps.

6.4.2. Methodology

The methodology for this experiment parallels the Modern Greek study in that it was composed of four tasks: a background questionnaire, a lexeme familiarity ratings task, a forced production sentence completion task, and a production ratings task. The implementation different in some respects, however.

6.4.2.1. Experiment structure

We used the background questionnaire to collect basic demographic information from each subject (e.g. age, sex, current and previous cities of residence, etc.), and information about language use (e.g. native language, what language is used in the home, what language is used at work, etc.). Based on this information we subsequently removed the data of two subjects who were not eligible for the study. An eligible subject was someone who was born and raised through adulthood in a Russian speaking country, who spoke Russian in the home as a child, and who still speaks Russian on a regular basis.

The background questionnaire was administered as a pencil-and-paper task.

We split the other three tasks into two parts each. Subjects completed the familiarity ratings task for half of the stimuli, followed by the production and ratings tasks for those same stimuli, which were interleaved as described below. After a break, they would then repeat the process for the other half of the stimuli. For these tasks subjects sat at a computer and responded to prompts on the screen. The experiment was

administered using the psychology experiment software E-prime. See Appendix E for the full experiment materials.

In the familiarity ratings pretest subjects saw a Russian word in the middle of the screen in red letters, and a series of numbers with labels below the word in blue. They judged how familiar that word was to them, and how often they use that word, based on the six-point Likert scale. They were asked to respond as quickly as possible while still being accurate by pushing the corresponding number on a numeric keypad.⁸⁷ The scale was: 1 = I don't know the word. / 2 = I can guess the meaning of the word, but have never heard it. / 3 = I am familiar with the word, but don't use it. / 4 = I may have used this word a couple times. / 5 = I use this word sometimes. / 6 = I use this word frequently. The task included two practice sessions, each of which consisted of ten stimuli. During the first, subjects saw the full labels for the scale on the screen at all times, but during the second, the labels were shortened (e.g. "don't know", "don't use", "use a lot") to discourage reading and overthinking. The subsequent non-practice items displayed these shortened labels. All instructions and labels were presented in Russian.

The task was self-timed, and subjects received feedback on their pace after every 10 words of practice, and after every 20 words thereafter. If their mean response time for all stimuli to that point was faster than 2.5 seconds, they received the message "x seconds

⁸⁷ I used an external numeric keypad rather than a response box because I felt that it was important to distinguish all six of these points on the scale rather than the five possible with response boxes. The problematic value, in a sense, is "I can guess the meaning of the word, but have never heard it." In my experience, this is a necessary value for familiarity scales used to judge Slavic languages because rich morphological systems create situations in which a word is easily understood by analysis of component parts, but has no frequency in the language as a whole word. This means that the response times reported in this experiment are not accurate to the millisecond. According to the E-prime User's Guide, keyboards introduce a response delay averaging 5ms, as compared with response boxes. Considering that typical response times were upwards of 1000 milliseconds for word production and in the hundreds of milliseconds for familiarity judgments, this margin of error is minor.

per response. Good job!”, where x is their average response time. If the mean response time for all stimuli to that point was slower than 2.5 seconds, subjects received the message “ x seconds per response. Try to go faster!”. Most subjects had an overall average of fewer than 2.5 seconds per response by or shortly after the end of the practice sessions.

The main section of the experiment consisted of a cloze procedure forced production task and a self-rating task. First, subjects saw an incomplete Russian sentence in green letters in the center of the screen, with an underscore in place of a missing verb. Once the person had read the sentence he/she pushed any button on the keypad, and the missing verb appeared on the screen in the infinitival form, in red letters below the sentence. The subject then said the word aloud in the form needed to complete the sentence. For the target words, the sentential frame always required a first person singular non-past form. For fillers, a different present tense form or the infinitive was required. Subjects were instructed to say their responses as fast as they could, while still being accurate. Subjects had only 3 seconds to respond once the word displayed on the screen, before the experiment moved to a ratings slide.

The ratings slide prompted subjects to say a number reflecting how confident they felt that the form of the word that they had just said was correct. The instructions encouraged subjects to choose their own scale, emphasizing that only the relative distance between the numbers was important, and not the absolute values. They were asked to randomly assign a number to the first stimulus, and then double that number for the second stimulus if they felt twice as confident in it as in the first stimulus, half it if they felt half as confident, etc. This is free magnitude estimation. Subjects had 2.5

seconds to respond with a number once the ratings slide appeared. The experiment then moved on to the next sentential frame. Subjects received 10 practice items.

Pilot testing indicated two problems with this ratings methodology. First, it showed a tendency for subjects to automatically assign the lowest score in their scale to nonce words, on the apparent logic that if a word does not exist in Russian it cannot possibly be “correct”. In response, we made a point between the familiarity ratings pretest and the main section of telling subjects to judge the “made up words” as if they were real words of Russian, explaining that words are always coming and going in the language, and Russian speakers must always make decisions about how to create and use new words. This seemed to solve the problem for all but two subjects during main testing. I removed all data from these two subjects from the subsequent analysis.

Second, while the experiment instructed subjects to use free magnitude estimation, with perhaps one exception they actually used closer to a percentage scale, with fixed maximum and minimum values (zero was almost universally used as a minimum, but maximum values were different for different speakers), and a fixed number of points along the scale, typically about 8. The measures of confidence were not necessarily erroneous, but are more accurately treated as reflecting a ratio scale with a fixed lower bound, rather than as magnitude estimation.

The same set of 250 stimuli, all verbs, were used in all three tasks. The experiment presented each word once in each task.

6.4.2.2. Stimuli

We selected stimuli from a representative sample of Russian verbs based on a variety of criteria.⁸⁸

First, we compiled a list of gaps from nine dictionaries and previous research on gaps, then selected twenty words with first person singular gaps from the list (see APPENDIX D) based on the number of sources which cite the word as having a gap, lemma frequency, morphological complexity, stem-final consonant, and pairing. We gathered lemma frequencies from the Russian National Corpus.⁸⁹ We discarded those with a frequency of less than one token per million, and among the remaining words, chose items which ranged widely in frequency, were maximally morphologically simple (when possible), which represented a variety of stem-final consonants (4 with /t/, 6 with /d/, 4 with /s/, 6 with /z/), and which matched another gap as well as possible in terms of frequency, stem type, and number of syllables. This created 10 pairs of gaps.

Three other types of stimuli were matched to these 10 pairs of gaps: non-defective dental stems, palatal stems, and 1st conjugation stems. Non-defective dental stems, as described above, are lexical items which belong to the same conjugation class as the

⁸⁸ Maria Alley, Bryan Brookes and I created a representative list of potential stimuli in the following way: First, we identified a large sample of Russian verbs by searching a reverse alphabetized list of Russian words. Verbs are easily identified with a reverse alphabetized list due to infinitival suffixes. The list contained 99,430 words. 26,263 were verbs. 4,463 were verbs with /t, d, s, z, st/ at the end of the infinitival stem (both the first and second conjugation classes included). 2,502 were words with /č, š, ž/ at the end of the infinitival stem.

Second, we separated verbs with /t, d, s, z, st/ at the end of the infinitival stem into conjugation classes via an automated search of an online version of Ožegov (1972) (<http://starling.rinet.ru/cgi-bin/query.cgi?root=/usr/local/share/starling/morpho&morpho=1&basename=/usr/local/share/starling/morpho/ozhegov/ozhegov>). The search retrieved the first and second person singular forms and any comments about usage for all 4,463 verbs with /t,d,s,z,st/ immediately prior to the infinitival suffix, all 2,502 verbs with /č, š, ž/ in this position, and 10% of the remaining verbs. This allowed us to separate verbs according to inflection class. This process resulted in lists of all gaps, all non-defective dental stems (2nd conj.), all palatal stems (2nd conj.), and a substantial number of first conjugation verbs.

⁸⁹ <http://corpus.leeds.ac.uk/ruscorpora.html> and also <http://ruscorpora.ru/>

gaps, and which have the same morphophonological structure – /t,d,s,z/ at the end of the non-past stem. Palatal stems also belong to the 2nd conjugation class but have /č,š,ž/ at the end of the stems. Remember (Table 36) that these have the same stem formation throughout the non-past paradigm, unlike the dental stems which alternate. We matched items in these three stem types to the gaps (one example of each stem type for every pair of gaps) according to lemma frequency,⁹⁰ number of syllables in the first person singular non-past form, and morphological complexity. This resulted in 50 stimuli which are real words of the Russian language.

We additionally composed 30 similar nonce words – 10 dental stems, 10 palatal stems, and 10 first conjugation verbs.

Finally, we included 10 lexemes for which there is known and widespread morphological variation (henceforth, *doublets*). In all cases these doublets were 1st conjugation verbs, and the variation involves a reanalysis of the shape of the stem. For example, some people inflect the 3sg of the verb *махать* / *maxat* ‘to wave (a flag)’ as *мау-ем* / *maš-et* while others use *маха-ем* / *maxa-et*.

We included these to explore the relationship between variability, paradigm predictability, and subjects’ confidence ratings. For doublets, there is significant variation, but the 1sg non-past form is still fully paradigm predictable because the variation affects the entire paradigm (see Table 39). Thus the first person singular form is predictable based on any other form of the paradigm, and vice versa.

⁹⁰ In addition to frequency information mined from the Russian National Corpus, Maria Alley verified that in her opinion as a native Russian speaker, the words which were paired across each of the four stem types were comparable in terms of frequency in her variety of spoken Russian.

кудахтать kudaxtat' 'to cackle'	SINGULAR	PLURAL	кудахтать kudaxtat' 'to cackle'	SINGULAR	PLURAL
1 ST P.	кудахчу kudaxču	кудахчем kudaxčem	1 ST P.	кудахтаю kudaxtajū	кудахтаем kudaxtaem
2 ND P.	кудахчешь kudaxčeš'	кудахчете kudaxčete	2 ND P.	кудахтаешь kudaxtaeš'	кудахтаете kudaxtaete
3 RD P.	кудахчет kudaxčet	кудахчут kudaxčut	3 RD P.	кудахтает kudaxtaet	кудахтают kudaxtajut

Table 39: Example of stem reanalysis in Russian (morphological doublets)

By contrast, if we find unexpected non-alternation in the 1sg of dental stem verbs, this means that there is both variation and paradigm non-predictability of the 1sg form.

Comparing subjects' confidence ratings for the doublets to ratings for the dental stems thus allows us to separate the issues of variability and paradigm predictability.

In summary, there were 90 stimuli representing 8 conditions, across which stimuli were paired as closely as possible, with the exception of the doublets. For example, the word *чудить* / *čudit* 'to behave eccentrically' is a gap. In the (hypothetical) first person singular non-past form it has 2 syllables, according to the Russian National Corpus it has a lemma frequency of 2.5 tokens per million words, it contains no prefixes, and the stem ends in [d]. Along these lines it is matched to another gap *чадить* / *čadit* 'to singe', the regularly inflected dental stem word *прудить* / *prudit* 'to dam up', the nonce dental stem word *бадить* / *badit*, the regularly inflected palatal stem *бренчать* / *brenčat* 'to strum',⁹¹ the nonce palatal stem word *кленчать* / *klenčat*, the regularly inflected 1st

⁹¹ Slavicists will recognize that *бренчать* belongs to a relatively infrequent subtype of palatal stems. Most second conjugation stems have infinitival forms with /i/ in the infinitival form, where *бренчать* has /a/. /a/ is more typical of infinitives for first conjugation stems. In this study we tried, where possible, to avoid stems of this subtype where possible, but the overall limited number of second conjugation palatal stems made this at times impossible without sacrificing the other criteria used for matching. Only three palatal stem items have /a/ in the infinitive – *бренчать*, *кленчать*, and *брюзжать* 'to be grumpy'. The

conjugation stem word *нашумь* / *našit* ‘to sew onto’, and the nonce 1st conjugation stem word *зафумь* / *zafit*’.

The types of target stimuli are summarized in Table 40.

	stem shape		
	dental stems (t/d/s/z)	palatal stems (ch/sh/zh)	1 st conj. stems
non-defective verb	10	10	10
nonce verb	10	10	10
gap	20		
doublet			10

Table 40: Summary of target stimuli for Russian gaps experiment

The experiment also included 170 filler verbs and 20 practice items, for a total of 270 test items. As described above, each item was presented three times – once in the familiarity ratings pretest, once in the cloze procedure forced production task, and once in the confidence ratings task. The stimuli were organized into 8 blocks, which were presented in 8 different orders. Within blocks stimuli were randomized, with the exception that no two target stimuli of the same type could be next to each other. Including consent, debriefing, the background questionnaire, the computer work, and a few breaks, the entire experiment lasted 1 hour to 1 hour 30 minutes per subject. Subjects were paid for their participation.

remaining 17 have /i/. This difference apparently led to a few interpretations of *кленчатъ* as a first conjugation stem (1sg *кленчаю* / *klenčaju*), but otherwise it had no noticeable effect on the data.

6.4.2.3. Types of data collected

From this experiment we collected five kinds of data.

- Lexeme familiarity ratings, on a scale from 1 (low) to 6 (high).
- Speakers' reaction times for lexeme familiarity ratings.
- The verb form that subjects say to complete a sentential frame when prompted with the infinitival form.
- The reaction time for subjects' verb productions.
- Subjects' ratings for how confident they were that their verb productions were correct.

The lexeme familiarity ratings and both types of reaction times were collected using E-prime. The verb forms and confidence ratings were spoken aloud by the subjects and recorded using a Shure SM10A microphone and a Marantz compact disk recorder.

Since the voice key in E-prime is notoriously unreliable in recording response times, particularly for words beginning with obstruent consonants (this includes virtually all of our Russian stimuli), we recorded a tone onto the same track as subjects' responses. This tone was output by E-prime at the beginning of each slide on which speakers were prompted to produce verb forms (after having read the sentences). This allowed us to check for erroneous verb production reaction times by measuring the time from the tone to the beginning of the subject's response using the waveform editor Praat. The subject did not hear the tone.

During analysis of the data, the accuracy of the response times generated by E-prime was checked against the recording. Based on a sample of 20% of responses, we found that the voice key was consistently triggered at the onset of the vowel. We adjusted the response times produced by the voice key accordingly, by measuring the average length of onsets on a consonant by consonant basis. For example, for the nonce word *badit* we would subtract from the response time the average number of ms from the beginning of prevoicing to the onset of vocalic formants, as measured from a sample of stimuli with word-initial /b/. For voiceless consonants we assumed 30ms of pre-burst closure period, although this has no physical manifestation in the waveform.

To speed analysis, a phonetically trained researcher or a native Russian speaker also listened to and wrote down subjects' verb forms and confidence ratings for target items during the experiment. These were then checked against the recording when the response was in doubt.

6.4.2.4. Participants

Subjects were recruited through flyers at local businesses that cater to Russian émigrés, emails to international students at Ohio State University from Russian speaking countries, and word of mouth. Twenty-two native speakers of Russian participated in this experiment.⁹² At the time of the experiment (2006) all were residents of Columbus, Ohio or its suburbs. There were 9 men and 13 women. More than half were from Russia; approximately 1/3 were from the Ukraine, but had learned Russian as their first language.

⁹² These twenty-two subjects do not include seven whose results were removed. Two had arrived in the United States as young teenagers, and reported that they did not at the time of the experiment speak Russian on a regular basis. For three subjects technical problems while running the experiment caused significant amounts of data to be lost. Two did not follow directions in the confidence ratings task, giving uniformly the lowest rating to all nonce words, apparently solely because they were nonce words.

One person was from Moldova. The subjects ranged in age from 19 to 60+; the majority were 25-35 years old. All reported Russian as their native language and the native language of at least one parent. All reported speaking Russian on a regular basis at the time of the experiment, typically with family members. Some subjects were permanent émigrés to the United States; others had come to the United States for education.

6.4.3. Results

6.4.3.1. First person singular gaps confirmed

First, three pieces of evidence establish that our particular group of speakers identify the relevant lexemes as being defective, or minimally as being different from normal, productive 1sg forms. First, when forced during the cloze procedure task to produce the 1sg form of a verb (= all target verbs), subjects were slower to respond if the verb has a (prescribed) 1sg gap than if it is a non-defective verb. They were even slower to respond with the 1sg form of nonce verbs. See Figure 22.

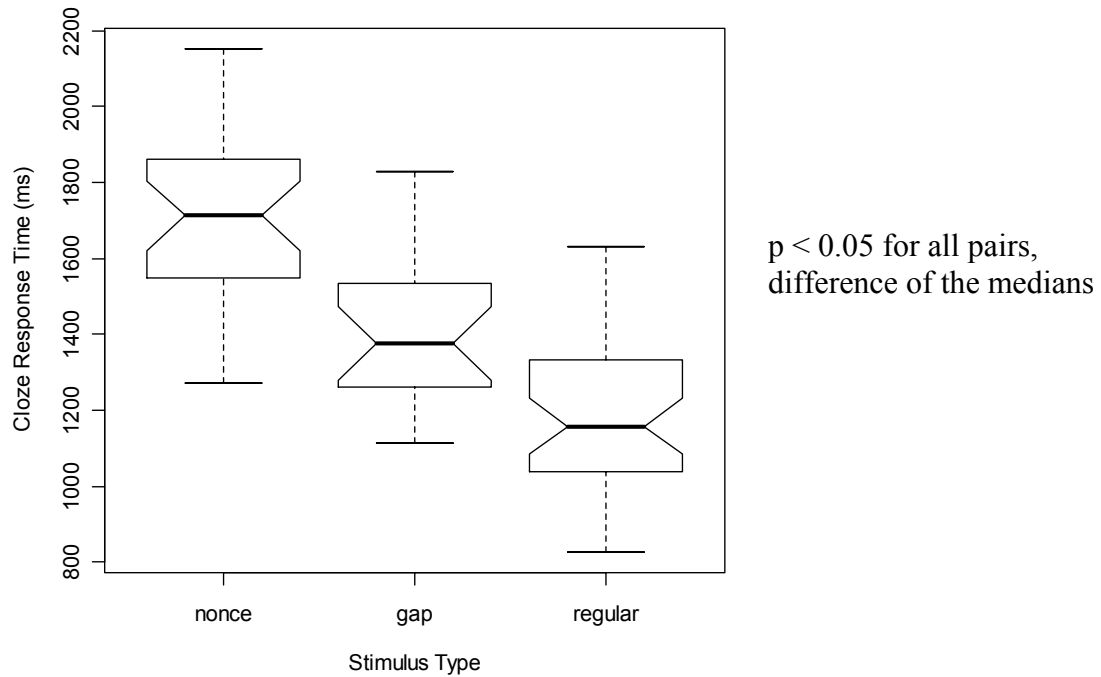
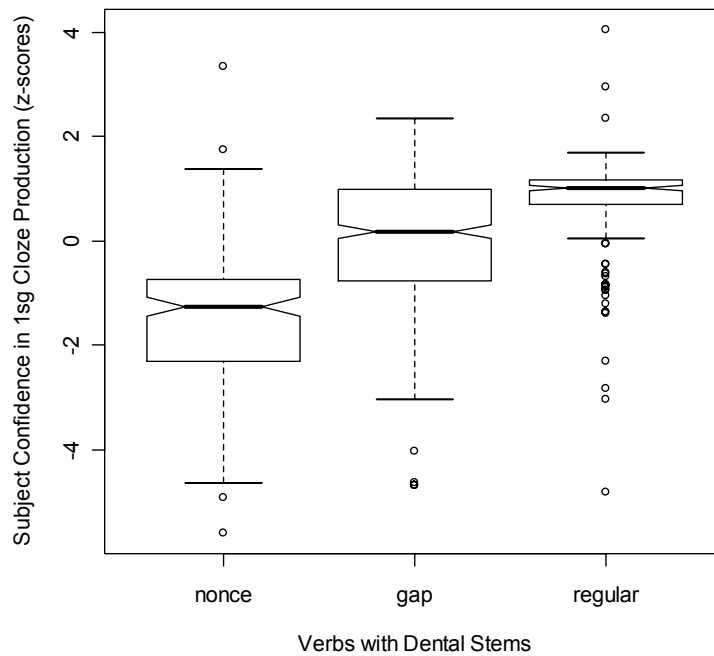


Figure 22: Response times to cloze procedure task (production of 1sg), according to stimulus type

Second, we found that in rating how confident they were that they had produced a “correct” 1sg form, subjects were generally more confident in their productions of non-defective dental stem verbs than either gaps or nonce verbs with dental stems. This is shown in Figure 23, which graphs subjects’ ratings of their productions (normalized as z-scores by subject) according to the type of dental stem verb.



$p < 0.001$ for all pairs,
difference of the medians

Figure 23: Subject confidence in 1sg response, for dental stems

Finally, for all non-defective, non-nonce verbs, how familiar a person was with a lexeme overall affected how confident they were that they had produced the correct 1sg form of that word ($p < 0.001$). By contrast, when a verb had a gap in the 1sg, familiarity with the lexeme had no statistical effect on whether subjects thought that they had produced the correct 1sg form ($p = 0.492$).⁹³ This is shown in Figure 24.

⁹³ This differs from the results in Albright (2003). He found a correlation in Spanish between lexeme familiarity and subject confidence for both regular verbs and gaps.

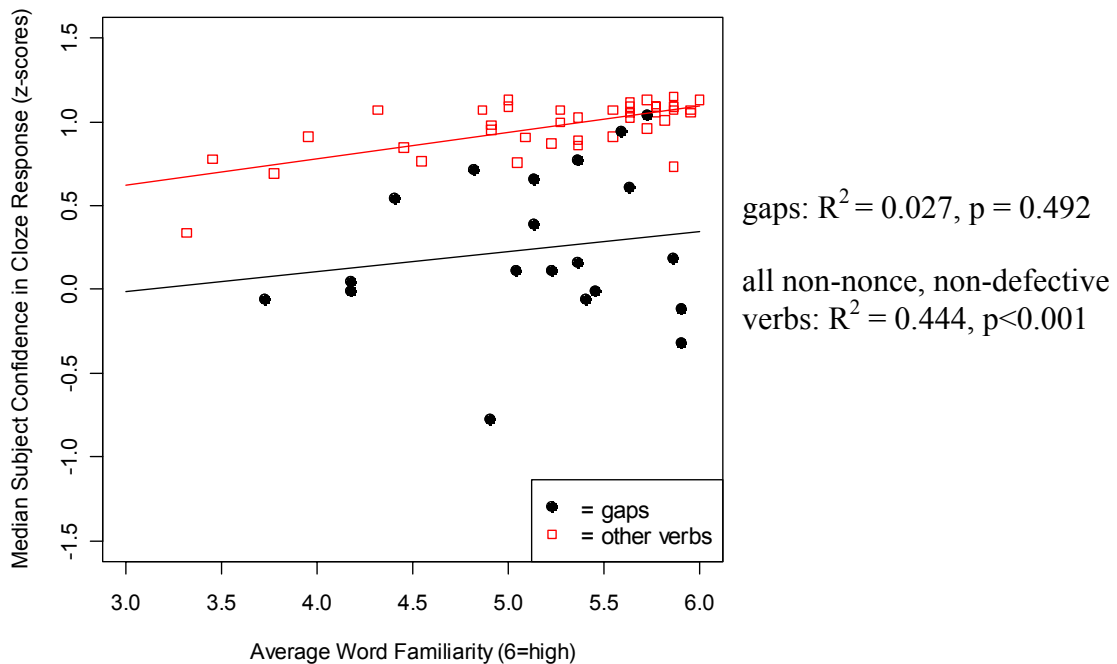


Figure 24: Subject confidence in 1sg response, as a function of lexeme familiarity

The lack of correlation between familiarity and confidence for the gaps may represent a word frequency effect. The stimuli were matched for lexeme frequency, but as shown in Figure 21 on page 165, a gap (by definition) has an unusual relative frequency distribution. For non-defective verbs, lemma frequency is (likely to be) a strong predictor of word frequency. Thus, word frequency effects can result in a correlation between lexeme familiarity and subject confidence. For verbs with 1sg paradigmatic gaps, however, lemma frequency is not predictive of the frequency of the 1sg. This results in no correlation between subject confidence and lexeme familiarity for these stimuli. The longer response time for gaps and the overall lesser confidence that speakers have when producing 1sg forms of gaps stimuli are also consistent with word frequency effects.

These measures do not indicate much about the relationship between defectiveness and the structure of the morphological system, but they support the corpus information and dictionary descriptions and are important for establishing a foundation: our participants clearly distinguish defective and non-defective forms.

6.4.3.2. Correlation between intersubject agreement and confidence

More interestingly, we found a correlation between agreement over inflected form and subject confidence. First, there was significant variability in subjects' productions of the 1sg form, particularly for verbs with dental stems and for doublets. Table 41 gives the mean and median rate at which subjects agreed on the form of the first person singular (henceforth, *intersubject agreement*) for all conditions.

	DENTAL STEMS		PALATAL STEMS		1 ST CONJ. STEMS	
	MEAN	MEDIAN	MEAN	MEDIAN	MEAN	MEDIAN
NON-DEFECTIVE	0.87	0.95	1	1	1	1
NONCE	0.51	0.47	0.84	0.91	0.77	0.83
GAPS	0.54	0.52	DOUBLETS		0.64	0.52

Table 41: Average and median intersubject agreement ratings for 1sg productions

We calculated intersubject agreement from responses to the same item for all pairs of subjects. For instance, if for *победить* / *pobedit* 'to be victorious' subjects A and B said *pobežu*, while subject C said *pobedju*, the A-B and C-D pairs are coded as 1, and the A-C and B-C pairs are each coded as 0. Averaging across these individual pairs provides a measure of intersubject agreement for a given item. Then averaging across (or taking the median of) the item scores produces an average (median) agreement score for the condition. Scores were calculated solely on the basis of the inflectional morph; variation

in stress placement, vowel quality,⁹⁴ and other minor differences were ignored. Errors (e.g. producing the wrong lexeme) were not included in the analysis. Non-responses, circumlocutions, examples of a 2nd conjugation stem produced with 1st conjugation inflection or vice versa, or other responses which are not strictly errors and which could potentially be construed as avoidance strategies were included in the analysis but we treated them as a single response type because they were so various, and individually infrequent.

Inspecting the results in Table 41, the very fact that subjects did not always agree on the form of the 1sg for dental stems is, in and of itself, surprising because in Contemporary Standard Russian there is only one prescribed form for 2nd conjugation verbs with dental stems: the stem-final alternations $d \sim \dot{z}$, $z \sim \dot{z}$, $t \sim \check{s}$, $s \sim \check{s}$ are mandatory. Yet our subjects did not consistently produce the standard language form.

The lowered agreement scores are primarily the result of subjects producing some lexemes with unexpected non-alternation. By subject, rates of producing the prescriptive alternation for all dental stems ranged from 37% on the low end to 95% on the high end. By item, the nonce dental stems ranged from 0% alternation to 79% alternation, the gaps ranged from 14% alternation to 95% alternation, and the non-defective dental stem verbs ranged from 67% alternation to 100% alternation (six of the ten forms were produced with alternation by all subjects). Since the supposedly automatic alternation is obviously not automatic for gaps, nonce verbs, and some non-defective dental stems, this at least

⁹⁴ For example, *okan' e* was a notable characteristic of one subject's responses. Contemporary Standard Russian has a variety of vowel reductions. *Okan' e* is the failure to reduce the vowel /o/ to either /ə/ or /ʌ/, a dialect feature in southern Russia.

suggests the possibility that the existence and persistence of the Russian paradigmatic gaps can be explained as a problem of paradigm predictability.⁹⁵

Supporting this idea is the fact that individual subjects' confidence in their productions was correlated with the degree to which subjects agreed (as a group) on what the "correct" 1sg form was. Figure 25 shows that defective and non-defective dental stems fall along a single continuum in this regard.

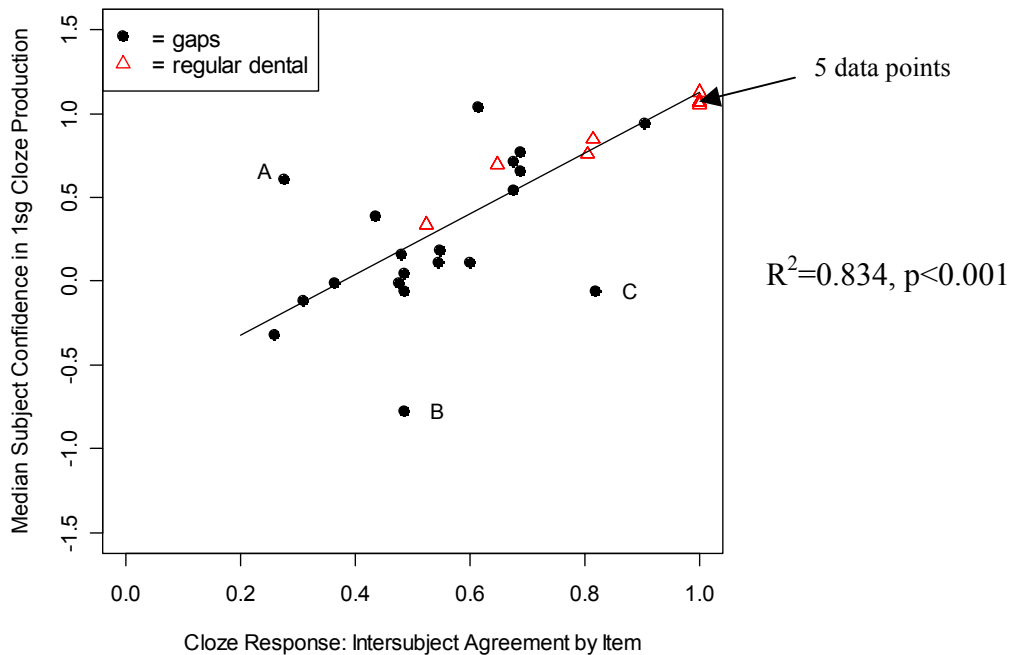


Figure 25: Correlation between intersubject agreement and confidence ratings for both defective and non-defective dental stems⁹⁶

⁹⁵ Moreover, non-agreement cannot obviously be reduced to an artifact of the testing method, since speakers were in complete agreement for two other categories that prescriptively allow only one form – palatal stems and 1st conjugation stems. (The minor disagreement among the nonce stems resulted from some intended 2nd conjugation stems being treated as 1st conjugation and vice versa.)

⁹⁶ Points A, B, and C are statistical outliers and were not included in the regression calculation.

We note that subjects' confidence in their 1sg verb productions did not as a whole depend on the particular verb form that they produced. In other words, in general participants were equally confident that they had said the "correct" form, no matter whether they had produced a form with unexpected non-alternation or with the prescriptive alternation. This was clearly true for both nonce dental verbs ($|t| = 1.473$, $p = 0.143$) and gaps ($|t| = 0.221$, $p = 0.825$). The data for the non-defective dental stems is harder to interpret. They trend in the direction that subjects were less confident in their productions when they had produced a form without an alternation. However, so few forms without alternations were attested that this may be an artifact.

The correlation between intersubject agreement and the confidence ratings, and the fact that the defective and non-defective dental stems fall along a single continuum, are consistent with the conclusion that the Russian 1sg non-past gaps are closely and actively tied to competing inflectional patterns. We find this a surprising result.

6.4.3.3. No correlation between variation and confidence

Moreover, the same correlation was not found for doublets. As shown in Figure 26, subjects reported being maximally or near-maximally confident in their productions of all doublets, regardless of whether intersubject agreement scores were high or low. This indicates that paradigm predictability, not simply the existence of two inflectional patterns, drives subjects' confidence ratings.

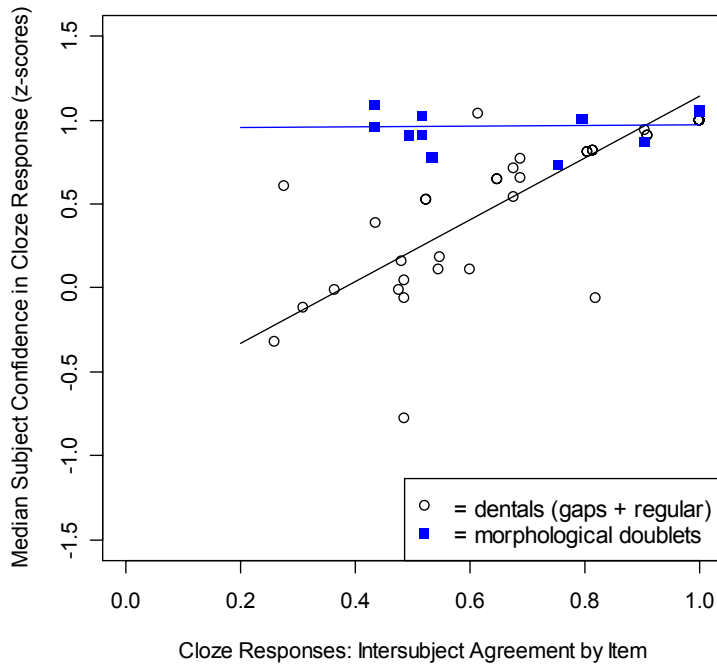


Figure 26: No correlation between intersubject agreement and confidence ratings for doublets

As described in the methodology section above, the variation in the doublets involves two analyses of the non-past stem shape. For *кудaxмать* / *kudaxtat* ‘to cackle’, some people use the non-past stem *kudaxč-* while others use *kudaxtaj-*. The latter is probably the newer stem, being a reanalysis based on the stem for the infinitive and past tense. The important thing to note here is that whichever stem shape is used, it is used throughout the non-past tense (see Table 39 on page 178). By contrast, for dental stems the alternation applies only in the first person singular form among the non-past forms. The other non-past forms remain the same, regardless of the 1sg form.

This difference entails that a given first person singular non-past form of a doublet can be predicted from any other form of the non-past paradigm. While there may

be variation within the community, within each variant paradigm the forms are mutually reinforcing. By contrast, if we assume, as the data indicates, that unexpected non-alternation represents a possible pattern, in paradigmatic terms the 1sg non-past of dental stems is isolated. In this experiment the gaps and the doublets showed equal variability, and subjects reported that they were equally familiar with both sets of lexemes. Paradigm predictability thus seems to be the best available explanation for the lower confidence that subjects exhibited in gaps and non-defective dental stems, relative to their confidence in doublets.

Overall, the point here is that the data presented so far is quite surprising from the perspective of the standard language. The facts are consistent with a paradigm predictability account as active, synchronic motivation for the Russian gaps. However, there are two reasons to still be cautious about this conclusion: the analysis by subject, and more importantly, the analysis of the actual responses, beyond just the rate of agreement.

6.4.3.4. Analysis by subject: No correlation between alternation and confidence

If the Russian gaps are the result of low (paradigm) predictability of the word form, we would expect to see this pattern not only by item, but also by subject. Specifically, we would predict that individual subjects whose responses are relatively evenly split between alternating and non-alternating forms would have low confidence in their productions of gaps, relative to their confidence in the regular dental stems. By contrast, subjects who virtually always produced forms with (or without) alternations should have equal

confidence in the gaps as in the dental stems because that subject faces no difficulty in choosing the appropriate word form in either case.

This prediction is not upheld. As shown in Table 42, there is no correlation between consistency in producing (non-)alternating forms and confidence at an individual level. A simple linear regression of subject confidence according to consistency in producing alternation/non-alternation yielded a non-significant result ($p=0.592$).⁹⁷

Subject	% dentals produced w/ alternation	average confidence difference: regular dentals minus gaps (Z)
16	36.8	1.107
28	38.5	0.6
21	39.4	0.729
27	39.5	0.211
11	44.7	0.84
8	52.6	1.1
19	54.3	0.75
3	61.8	0.459
20	63.2	0.466
23	72.5	0.725
14	74.4	0.913
5	77.4	0.864
6	82.9	2.019
25	83.3	0.292
26	83.3	0.074
18	84.2	-0.2
17	86.1	1.107
2	86.5	0.7
29	86.8	1.153
24	88.2	0.667
13	89.5	0.047
7	94.6	0.4

Table 42: No correlation between consistent production and confidence

⁹⁷ Note that for this measure, the percentage of forms for which a given subject produced the prescriptively required alternation was converted to a consistency score by subtracting any value below 50 from 100. Thus, Subject 16, who produced the alternation only 36.8% of the time was 63.2% consistent in his/her responses.

This result is inconsistent with the idea that competition between alternating and non-alternating patterns directly and actively causes the 1sg gaps. It is more consistent with Baerman and Corbett’s hypothesis that the gaps have a primarily historical explanation, and that they have subsequently been lexicalized.

6.4.3.5. Analysis of responses: Paradigmatic connections

And finally, perhaps the most interesting data comes from the actual responses themselves. A subset of the data from the defective lexemes is reproduced in Table 43.

ITEM	S11	S13	S14	S16	S17
<i>победить</i> <i>pobedit’</i>	побед’ю pobedju	побеж’у pobežu	побеж’у pobežu	N/A	побеж’у pobežu
<i>убедить</i> <i>ubedit’</i>	убед’ю ubedju	убеж’у ubežu	убеж’у ubežu	убед’ю ubedju	убежд’у ubeždu
<i>чудить</i> <i>čudit’</i>	чуд’ю čudju	чуж’у čužu	чуж’у čužu	чуд’ю čudju	чуж’у čužu
<i>голосить</i> <i>golosit’</i>	голос’ю golosju	голош’у gološu	голош’у gološu	голос’ю golosju	голош’у gološu
<i>приютиться</i> <i>prijutit’sja</i>	приюч’усь prijučus’	приюч’усь prijučus’	пр’июч’усь prijučus’	приют’юсь prijutjus’	приюч’усь prijučus’
<i>грезить</i> <i>grezit’</i>	гр’езю grezju	греж’у grežu	гр’ежу grežu	гр’ежу grežu	гр’ежу grežu
<i>ощутить</i> <i>oščitit’</i>	ощут’ю ošcutju	ощущ’у oščušču	ощущ’у oščušču	ощу-, ощу- не знаю ošču-, ošču-, I don’t know	ощущ’у oščušču

Table 43: A sample of responses for defective stems

The most important response is highlighted in bold – *убежду / ubeždu* ‘I will convince’.

The *d’ ~ žd* alternation is never found in first person singular forms (in the modern language) among non-defective lexemes. However, remember from (28) on page 159 that this alternation does appear in the past passive participle. Usually the alternation in

the past passive participle is the same as in the first person singular for dental stems.

Only a subset of dentals have the /žd/ alternation, e.g. inf: *освобо^дить* / *osvobodit'* ‘to become free’; 1sg: *освобо^жу* / *osvobožu*; ppp: *освобо^ждѣн* / *osvoboždjon*. We call this, and a parallel alternation *t ~ šč*, the *Church Slavonic alternations*, because of their historic origins.

As shown in the table below, Church Slavonic alternations were produced 22 times for defective lexemes, but never for nonce dental verbs or non-defective dentals. Three verbs account for all 22 examples: *oščitit'* (9, *oščušču*), *pobedit'* (8, *pobeždu*), and *ubedit'* (5, *ubeždu*).

		Subject Responses				
		Prescriptive (w/ altern.)	No alternation	Church Slav. alternation	1 st conj.	Total
Stimulus Type	non-defect. dental	192 (93.7%)	10 (4.9%)	0 (0%)	3 (1.4%)	205 (100%)
	gap	252 (58.6%)	142 (33.0%)	22 (5.1%)	14 (3.3%)	430 (100%)
	nonce dental	90 (45.7%)	98 (49.7%)	0 (0%)	9 (4.6%)	197 (100%)

Table 44: Summary of subject responses to dental stems

The form *oščušču* is listed as the 1sg form by Ožegov (1972) and Okuntsova (2004) (Okuntsova also lists it as “not good sounding”, i.e., a gap). Since there are verbs which prescriptively have the alternation *t ~ šč*, this could thus be considered the prescriptive form. But these three verbs have something in common – they are exactly the verbs that have the Church Slavonic alternation in the past passive participle.⁹⁸ For the other four

⁹⁸ The stem shape /...žd-/ also occurs in the imperfective pairs of these verbs: *побеждать* / *pobeždat'* and *убеждать* / *ubeždat'*, and this is likely a contributing factor favoring many speakers' choice of /žd/ in the

defective stimuli ending in /d/, the alternation in the past passive participle would be expected to be /ž/.

The fact that the Church Slavonic alternations creep into first person singular forms – but only for this subset of defective lexemes – is significant. It indicates that when forced to fill gaps, speakers are looking outside of the first person singular for a form. This strategy makes sense if (a) speakers know that the normal rules of 1sg formation do not apply (e.g., because there is a lexicalized gap), and (b) there is a paradigmatic connection between the first person singular cell and the past passive participle cell. It is not clear that this data can be accounted for as the result of competing rules for the first person singular cell.

6.4.4. Conclusions

In the end, the Russian data is complicated. It is neither fully consistent with a synchronic account of paradigmatic gaps as paradigm predictability, along the lines of what I proposed for Greek in CHAPTER 4, nor fully what we would expect to find if the gaps have long been lexicalized. In the absence of contrary evidence, we assumed that the paradigmatic gaps represent a cohesive group, but based on the results it seems that this may not have been a valid assumption. We were surprised to find unexpected non-alternation among almost all defective and nonce verbs, and even more surprised to find it among some non-defective verbs. In the future it is thus worth exploring the gaps on a more individual level, to see which might be amenable to a paradigm predictability approach. But even if such an account can be formed, it cannot explain the examples of

stem of their responses. However, their answers could not be interpreted as actually being the imperfective variant because the imperfective forms belong to the 1st conjugation, with the expected first person singular non-past forms *побеждаю* / *pobeždaju* and *убеждаю* / *ubeždaju*.

Church Slavonic alternation. Minimally for these lexemes (especially *нобѣдѹмѣ* / *pobedit'*, *убѣдѹмѣ* / *ubedit'*), we must conclude that the gaps have become lexicalized.

Additionally, these results should make us wary of interpreting speakers' forced productions directly in terms of inflectional rules. Orgun and Sprouse (1999) assume that speakers know what the first person singular non-past form would be, and they use this as the premise for a theory of surface filters (the CONTROL component). This study throws that underlying idea into doubt. Clearly, speakers rely on morphological structure when forced to fill a gap, but they do not necessarily produce the form we would expect if the lexeme were not defective.

6.5. The development of the standard language as a historical source of paradigmatic competition and sociolinguistic motivation for avoidance

The results of the production and ratings experiment indicate a complicated relationship between inflectional structure and defectiveness, in which gaps may not be an internally coherent group, and some are lexicalized while others may not be. This raises the question of how the language came to this structure historically. In this section I briefly review some of the historical facts surrounding the development of the standard language. Although the historical data is scant, there are hints about how the paradigmatic gaps may have first arisen. Although paradigm predictability is a piece of the puzzle, the focus here is on the kind of social conditions that I speculate are needed for paradigmatic gaps to develop, as opposed to free variation, or some other resolution to paradigm non-predictability.

While Contemporary Standard Russian more or less represents a codification of the speech of social elites, the development of the standard and literary languages was not always based in a spoken norm. Prince Vladimir's conversion to Christianity in 988-9 on behalf of all Rus' effectively started the literary tradition of East Slavic peoples. At that time, Rus' received liturgical books and teachers from South Slav regions, and while the language of these books (Old Church Slavonic) was somewhat different from the local version of Slavic in that it reflected South Slavic reflexes and dialect features, it is generally accepted that the new linguistic features used for (church) writing were not so different as to constitute an impediment to understanding for Russians (Schenker 1995, Vinogradov 1969, Vlasto 1988).

The influence of (Old) Church Slavonic is still strongly present in Contemporary Standard Russian, especially in the areas of vocabulary and (morpho)phonology. The relevant examples for the present purposes are the reflexes of Common Slavic *dj and *tj – Russian developed /ž/ and /č/, while Church Slavonic (ChSl) reflected the reflexes /žd/ and /š'j/ (šč). In Modern Russian, there are numerous pairs of words/stems, one with the native Russian reflex, and one with the Church Slavonic reflex. These forms are often stylistically or semantically differentiated, with the lexeme of Church Slavonic origin representing the higher style or more abstract semantics.

(30) Pairs of stems in Contemporary Standard Russian: Church Slavonic and native

Russian reflexes (taken from Vlasto 1988: 14)

ChSl Reflex	Gloss	Russian Reflex	Gloss
сопрово ^ж дать soprovo ^ž dat'	'to accompany'	прово ^ж ать provo ^ž at'	'see off'
возбу ^ж дённый vozbu ^ž djonnyj	'arouse (p.p.p.)'	разбу ^ж ённый razbu ^ž onnzj	'rouse (p.p.p.)'
то ^ж дество to ^ž destvo	'identity'	то ^ж ество to ^ž estvo	'identity'
еже ^н ощный eženo ^š čnyj	'nightly'	но ^ч ной no ^č noj	'nocturnal'
просве ^щ ать prosve ^š čat'	'to illuminate'	просве ^ч ивать prosve ^č ivat'	'to pass through (of light)'

In general, morphological influence from Church Slavonic was relatively minor, but the ChSl. reflexes became widespread in the past passive participle, in large part because the entire grammatical category was borrowed into East Slavic. For the first person singular non-past, by contrast, the native Russian reflexes were eventually standardized, setting up the partial non-parallelism between the alternations in the these two paradigmatic cells.

The Russian language underwent substantial changes in the 13th and 14th centuries, in part because the South Slavic languages had a renewed influence during this time on the language of East Slavic church writing (the Second South Slavic Influence). This influence caused a significant rift between spoken Russian and written language of the church, which widened over time. As Vlasto (1988:366) notes, “By the beginning of the 17th c. ChSl. had everywhere – whether in Moscow, Kiev, or Vilna – to be acquired

with much study, and therefore a codification of ChSl. grammar became for the first time in its ESL history an urgent desideratum.” The written norm was both imbued with high social prestige, and was also inaccessible, even to many literate persons.

From the 17th to the 19th century, the place of Church Slavonic in the emerging literary language was a source of hot debate, characterized by alternating and overlapping waves of conservative return to an archaic, Church Slavonic-based form, and the incorporation of colloquial features (Vinogradov 1969). Lomonosov’s work was particularly influential, advocating what eventually became the basic outline of the modern standard language. According to Vlasto, Lomonosov’s basic premise was that

The ‘middle style’... should use this common stock of words [i.e., natively inherited words] with a judicious admixture of Slavonicisms. The ‘low’ style... will avoid virtually all Slavonicisms. The ‘high’ style will use Slavonicisms liberally, including new words formed on ChSl. models, with one important proviso: all such Slavonicisms must be immediately intelligible in Russian terms. (Vlasto 1988:381-2)

This proposal, however, potentially caused more problems than solutions for many literate Russians at the end of the 19th century. As Vinogradov argues, as a result of Lomonosov’s influence and other coinciding trends,

The grammatical system of the literary language also underwent great changes in the second half of the [19th] century. These were of two kinds. Grammatical doctrine, which had condemned the ‘folkish’ features of the older grammar... nonetheless still allowed those conversational grammatical forms which did not sharply contradict the orthoepic system of the written language... On the other hand, however, the tendency toward bookishness in scholarly and journalistic writings, and the instability of the boundaries between the written and conversational languages, led to a development of new grammatical forms based on the old categories of the literary language. A process of granting equal literary rights to opposing grammatical categories thus came into being (Vinogradov 1969:262).

In short, by the second half of the 19th century, the linguistic state of things is perhaps best described as chaotic. There was still a strong influence from Church Slavonic alongside a growing acceptance of grammatical features based in colloquial language. The end result was competition between native Russian and Church Slavonic forms for status, including an apparent debate over whether the Russian alternations (/ž/ and /č/) or Church Slavonic alternations (/žd/ and /šⁱ/) should be in the first person singular non-past cell. At the time, the pull of the two norms was probably strong for words of Church Slavonic origin, but much less so for native Russian words.

Moreover, one characteristic of colloquial speech was non-alternation in the first person singular non-past of dental stems. According to Vinogradov (1969:267), by the mid-nineteenth century, in city dialects morphophonological alternations had been leveled, including among dental stems, e.g. *гордюсь* / *gordjus* ' instead of *горжусь* / *goržus* ' 'I am proud of'. This is the same pattern that I found in the forced choice experiment described above. Of course, the standard language ultimately did not accept these stem levelings, but at the end of the 19th century, the non-alternating forms were in contention with the alternating forms, and both vied for status as standard language variants.⁹⁹

⁹⁹ There is one more piece of evidence which is too speculative to put too much weight behind, but which is nonetheless intriguing: "In official, scholarly, and publicistic styles it was occasionally necessary to obliterate or blur the individualized, often familiar and concrete, depiction of action which was frequently a property of the simple form of the verb. For this purpose, a periphrastic construction was used, consisting of a more or less abstract verb, which designated the action in general (or which had lost all or nearly all concrete meaning of any sort), and a deverbative noun, which designated the specific content of the action... Sometimes these constructions came from the Church Slavonic tradition (одержать победу [=oderžat' pobedu 'to score a victory']), and sometimes they were calques of West European phraseology... Synthetic forms of expression were replaced by analytical ones – on the model of West European languages" (Vinogradov 1969:250-51). If there was already a strong tendency to not use verbs such as

The end result was that towards the end of the 19th century, the first person singular cell of 2nd conjugation dental stem verbs became caught between three variants – the natively inherited alternations, non-alternation (leveling), and the Church Slavonic alternations. The Church Slavonic alternations were most relevant to lexemes of higher style / Church Slavonic origin, and the leveled pattern was most probably most influential for lexemes of lower style / native Russian origin. The historically inherited alternations competed in both cases.

This was all combined with an increasing valuation of adherence to a prescriptivist norm, and an expansion of the range of people for whom the normative standard was important. “[W]riters now came from very different social backgrounds, and the choice of subjects had broadened. The hypertrophy of artificial bookishness coexisted with a democratic broadening of the literary language” (Vinogradov 1969:254). Among other developments, a new merchant class was becoming established in Russian speaking cities, which caused a rearranging of social structure, and provided an alternate model of social prestige. These conditions were ripe for a large class of newly prestigious Russian speakers who felt insecurity over normative language standards, which were themselves in flux.

While it is problematic to equate historical attestation with historical development, there is some indication that gaps began appearing in the late 19th century and early 20th century. Ushakov’s (1935-1940) dictionary was among the first to cite a gap in the verb *нобедумъ* / *pobedit* ‘to lose’. This is also the lexeme most frequently cited in more recent dictionaries and grammars as having a gap, and thus potentially (as

pobedit’, this may have opened a wedge to a more general pattern of avoidance, and the subsequent appearance of gaps.

Baerman and Corbett argue) the original locus of gaps and the point from which others spread.

The timing is significant for the issue of whether defective stems arose from productive ones, or whether they were always defective. Since many of the defective stems have origins in Church Slavonic, it has sometimes been assumed that the lexemes have been defective in Russian ever since they were borrowed (e.g., Baronian 2005). But in fact, there is every indication that the lexemes were once well formed, and that defectiveness in the first person singular cell developed subsequently. Dictionaries in the late 19th century do not list the 1sg of *победить* / *pobedit* as remarkable in any way.

I hypothesize that paradigm non-predictability is requisite for the development of gaps (at least for the kind of gap discussed in this dissertation), but paradigmatic gaps are more directly the result of speakers' avoidance strategies. And avoidance only make sense if the relevant structure is a social marker or stereotype in the Labovian sense (Labov 1994). Gaps thus come from a social response to paradigm non-predictability, and not a direct, mechanistic result of grammatical structure. If not all variation has negative valuation attached to one or more variants, different types of variation could lead to different reports of confidence levels, even when paradigmatically unpredictable.

While the data is admittedly slim, I speculate that at the time that the gaps arose (late 19th century to early 20th century), both formal paradigm non-predictability and social stigma aligned in the Russian language and society. The instability of standard language norms resulted in competition between three variants in the first person singular non-past of dental stems for prestigious status. At the same time, the normative standard by all accounts became more important within Russian society. This may have provided

motivation to the new merchant class of the cities, and others, to avoid the first person singular cell where the valued variant could not be predicted.

More data is needed to support this account, of course, before it can be given much weight. But the larger point here is that paradigmatic gaps are not a mechanistic result of grammatical structure. They are the result of a response by speakers to weak points in inflectional structure. We must therefore look not only at formal morphological structure to understand paradigmatic gaps, but also the social conditions surrounding language use.

6.6. Summary

The Russian 1sg gaps have long been a mystery because they are tied to a morphophonological alternation in the standard language, but there is no obvious reason that the alternation should cause inflectional defectiveness. In this chapter I presented an experiment that looked at whether the standard language alternation applies uniformly in the relevant class of nouns. To my knowledge, this is the first study of the Russian gaps to include behavioral data. I was surprised to find widespread non-alternation among dental stem nouns, including some non-defective lexemes. More data is needed to demonstrate that non-alternation is an existing pattern for well-formed lexemes, but the evidence so far suggests that a paradigm predictability account might be viable as synchronic motivation for some paradigmatic gaps.

At the same time, a few words showed an alternation, *žd*, not found in the first person singular cell among non-defective lexemes. This indicates that at least some of the gaps in Russian are lexicalized, and that the gaps as a whole may not form a coherent

category. Moreover, these gaps reveal paradigmatic connections between the first person singular and the present passive participle cells in the stem paradigm. The appearance of this alternation makes perfect sense if we look beyond the first person singular cell to the past passive participle. This strongly supports not only a paradigmatic theory, but in particular a theory in which generalizations exist at successively broader levels (i.e., an inheritance hierarchy). On a local scale the first person singular cell, like the umlauting patterns in German, is governed by a separate generalization than the past passive participle. But on a more broad level they share a generalization.

Finally, I speculated that paradigm predictability is prerequisite for the appearance of (this kind of) paradigmatic gap, but it is not in and of itself sufficient. Equally important, speakers must have some social motivation for avoidance. This seems most likely when the paradigm cell serves as a social marker. The historical facts hint that both of these conditions coincided in Russian around the time that the first gaps are thought to have appeared.

CHAPTER 7

CONCLUDING THOUGHTS

7.1. A review of important points from this work

In the preceding chapters I have tried to shed light on the nature of the relationship between paradigmatic gaps and morphological (especially paradigmatic) structure. Traditionally, gaps have been treated as curious but marginal phenomena within the larger linguistic system. More recently, there has been a surge of interest in trying to explain gaps in exactly the opposite fashion, as epiphenomenal to general grammatical principles. I claim that while many examples of gaps are far from random idiosyncrasies, neither can gaps always be reduced to competing grammatical principles. I argued three main points.

First, I showed that in both Modern Greek and Russian, there is a strong connection between the structure of the lexicon and the existence of paradigmatic gaps – those inflected forms that are paradigmatically unpredictable based on lexical organization are prone to having gaps. Importantly, paradigm predictability is not the same as inflectional variation. The stem shape of the morphological doublets in Russian varies by speaker, but is fully predictable given any other form of the non-past inflectional paradigm. The doublets also show no signs of being defective; subjects in the production and ratings experiment treated the doublets as fundamentally different

from the first person singular gaps. Likewise, in Modern Greek two inflectional classes show equal internal variability with regard to stress placement in the genitive plural, but for one class the form of the genitive plural is predictable from the genitive singular while for the other class it is not. The latter class is the locus of 98% of the paradigmatic gaps in the genitive plural. Thus, inflectional variability may be a necessary criterion for a language to develop defectiveness, but it is not a sufficient one. Paradigm predictability entails variation, but is narrower in scope. And since predictability is an inherently paradigmatic concept, the data highlights the ways in which gaps are dependent upon inflectional structure, and supports a model of the lexicon in which stems form a network connecting paradigmatic cells and entire paradigms to each other.

However, the fact that gaps are dependent upon paradigmatic inflectional structure should not be taken as equivalent to saying that paradigmatic structure causes gaps. An area of paradigmatic unpredictability represents a weak point in an inflectional system, but speakers' reactions to that weak point – insecurity and subsequent avoidance – are the direct causes of paradigmatic gaps. This is perhaps my point of greatest departure from previous research, which has tended towards a mechanistic approach to explaining paradigmatic gaps. In straightforward terms, mechanistic approaches overpredict the appearance of gaps because they fail to be able to distinguish between multiple possible resolutions to the same type of weakness in inflectional structure. In response to paradigmatically unpredictable stress in the genitive plural of Modern Greek, speakers could have leveled the stress, rather than avoided the paradigmatic cell. Russian speakers could have accepted variation in the first person singular non-past, much as variation in the morphological doublets is largely accepted. The grammatical structure of

the language cannot distinguish between these outcomes because they are fundamentally rooted in social structure and speakers' beliefs about their language. A theory which only attends to the grammatical structure is therefore necessarily inadequate. This dissertation is not a sociolinguistic study, but it demonstrates the need to take a more sociolinguistically informed approach.

Finally, paradigmatic gaps are similar to other, productive morphological phenomena in being subject to lexicalization. While it is tempting to make conclusions about the synchronic relationship between gaps and morphological structure based on distributional data alone, as has often been done, the Greek data highlights that distributional data does not necessarily provide the entire picture. The results presented in CHAPTER 5, in particular, should lead us to rethink whether languages in which competing morphological patterns actively cause defectiveness are the rule, or the exception.

7.2. Questions for the future

Of course, there is much work still to be done. Perhaps most pressing are the questions surrounding lexicalized gaps. What processes lead to the lexicalization of gaps? And how do gaps persist after being lexicalized? Both the ability of gaps to be lexicalized in the first place, and their subsequent stability across generations, are at first glance counterintuitive.

7.2.1. What processes lead gaps to be lexicalized?

Taking these questions in turn, it is well established that many factors promote lexicalization, including phonological changes that obscure morphological relations

within the word, semantic non-compositionality,¹⁰⁰ and most famously, high frequency. Word-forms with high frequency (relative to their base) are likely to shift from being produced by active word formation rules to being lexically stored because direct access offers a processing advantage. And the data in CHAPTERS 5 and 6 indicates that at least some of the Greek and Russian gaps have made essentially the same shift from being actively motivated by inflectional structure to being lexically specified. Yet paradigmatic gaps are, by definition, the exact opposite of high frequency. How, then, can we understand that opposite characteristics lead to fundamentally the same result? If high frequency forms have a tendency to lexicalize, how can non-existent forms lexicalize?

This question must be left for future research, but I suspect that the answer lies in frequency distributions. As shown for Russian in Figure 21 in Section 6.2, the frequency of the defective cell in isolation is near zero, but in the context of the entire paradigm, paradigmatic gaps have a unique distribution. I hypothesize that speakers are sensitive to this distribution, and they use this information to extract the generalization that a given cell is defective. This effectively bypasses the inflectional process, promoting lexicalization. This is in line with recent work by Baayen and colleagues on sensitivity to frequency distributions (e.g., Baayen 2006, Hay and Baayen 2005).

7.2.2. Why are lexicalized gaps generationally stable (i.e., how are they learned)?

The question of how gaps remain stable across several generations after being lexicalized is more contentious, because it is tied up with issues of language learning.

¹⁰⁰ For example, *cobweb* is historically a compound derived from *coppe* ‘spider’ + *web*, but the analyzability as a compound is lost because *coppe* is not longer used.

In particular, the generativist tradition has often maintained that children cannot learn from explicit or implicit negative evidence. This line of argumentation began, for all intents and purposes, with Gold (1967) and Brown and Hanlon (1970). Gold argued that if children do not receive both positive and negative evidence, the latter allowing them to identify that a particular utterance has an error, then the types of grammars that children propose must be significantly constrained. Brown and Hanlon demonstrated that parents give explicit feedback on the truth value of a child's utterance, but not (often) on its grammaticality, suggesting that Gold's presupposition was valid – children do not utilize explicit negative evidence. Later evidence that there is no direct connection between feedback and learning has added to this argument (Pinker 1989), and work on retreat from overgeneralization concluded that if innate parameter settings exist, negative evidence may not be needed in the learning process (e.g., Morgan and Travis 1989).

Many studies of paradigmatic gaps have inherited this belief that children cannot learn from negative evidence. For example,

[How speakers know that a given word is not used with a given inflectional property set] ...can be restated in terms of negative evidence. Given that we know that speakers are able to produce or inflect words that they have never heard before, the default setting cannot be [-lexical insertion]. If that were the default setting, then this would amount to saying that every word is learned, a conclusion that would go against any generative model of morphology. But then, if words start out with the value [+lexical insertion], what evidence could allow learners to know that a given word is to be marked [-lexical insertion]? Only a specific instruction to the effect of the sort "do not use this form" could justify such a change. As we know, this is the kind of negative evidence that most theories of language acquisition do not recognize as valid. (Baronian 2005:131-132)

One possible resolution to this problem is to formally treat paradigmatic gaps as a byproduct of the grammatical system, for example, the result of competition between inflectional rules. Essentially, if paradigmatic gaps have no explicit status in the grammar, there is nothing to explicitly learn. The learnability of defectiveness rests on the learnability of the facts from which the defectiveness is itself actively derived. Baronian follows this path of logic. The feature [\pm lexical insertion] cannot be a feature of UG, primarily because retreat from overgeneralization is not possible without negative evidence, which is unavailable. He thus concludes that in the absence of a UG explanation, the morphological system must be structured in such a way that gaps need not be explicitly learned. He applies this principle to a study of French inflectional defectiveness.¹⁰¹

This kind of rejection of negative evidence is not rare in the study of inflectional defectiveness. Hudson (2000) uses essentially the same logic, concluding for the **amn't* gap in English that “There must be something about the grammar of English that causes the gap in a way that speakers don’t need any evidence for it and don’t try to fill it” (Hudson 2000:298). McCarthy and Wolf (2005:33) see it as an advantage of their MPARSE approach that it can “rely on well-established results about learning OT grammars from positive evidence only (Boersma and Hayes 2001, Tesar and Smolensky 2000).”¹⁰² Finally, Rice (2003:383) argues that children should not be assumed to be able

¹⁰¹ He also proposes an analysis of the Russian first person singular non-past gaps. Unfortunately, however, he misunderstands the inflectional class divisions of Russian verbs, and this causes his analysis to be untenable on the facts. For this reason, I have not discussed it.

¹⁰² McCarthy and Wolf do not provide a worked out model of how gaps are learned, but their claim is based on work within the OT framework of learning through constraint demotion (Smolensky 1996b). Essentially, this is a model of conservative learning, whereby structures are assumed to be ungrammatical until evidence to the contrary is received. While McCarthy and Wolf believe that this allows for learning defectiveness through positive evidence only (i.e., positive evidence for the well-formedness of everything

to learn from negative evidence, and he views his account as an “alternative perspective” that avoids this “problem”.

The problem with regard to the persistence of lexicalized defectiveness is obvious. If children cannot learn from negative evidence (i.e., directly learn from usage probabilities that some structure is ungrammatical), and paradigmatic gaps do not represent a feature of UG (a safe assumption), then gaps should only be able to persist as a direct consequence (byproduct) of inflectional structure. Lexicalized gaps, which are divorced from that structure, should not be learnable.

Many areas of linguistics reject the claim that children do not use implicit negative evidence in the learning process. There is not space here to go into the details, but see Sokolov and Snow (1994) for an overview of arguments and evidence from the child learning literature. See Regier and Gahl (Regier and Gahl 2004) for arguments from a computational perspective. There are at least two studies on paradigmatic gaps that assume gaps are learned primarily from implicit negative evidence (Johansson 1999, Orgun and Sprouse 1999).

Inasmuch as there is strong evidence for lexicalized gaps, well above and beyond that presented in CHAPTER 5, it seems that we must accept that either children learn from implicit negative evidence, or there is some other way to learn lexicalized defectiveness. There are, to date, no fleshed out theories of how children learn paradigmatic gaps, but this question is important both for our understanding of the morphological structure of defectiveness, and also more generally for arguments about evidence used in language learning. It should be taken up in future research.

except the gaps), it is not clear that there is a deep conceptual difference between this and learning from negative evidence. It seems to be mostly a difference of formalism.

7.2.3. The implicational structure of the paradigm

Finally, apart from questions directly related to inflectional defectiveness, one of the more significant questions arising from this dissertation relates to the expansiveness of paradigmatic predictability as an explanation for language change and synchronic linguistic structure. While much of recent research within paradigmatic frameworks has focused on the indirect relationship between inflectional form and inflectional categories, and this work is certainly worth doing, this dissertation can be seen as an argument to maintain a place for the more traditional Word and Paradigm notion of implicational relations holding among cells of the (stem) paradigm. In pre-generative linguistics these relations were important for analogy. This work hints that implicational relations may have a much broader role to play in morphological structure.

As the first book-length study of paradigmatic gaps, my primary goal has been to lay a foundation for future study of the topic. If nothing else, it is clear that while lexemes may be defective, this does not necessarily make them marginal to the linguistic system. Paradigmatic gaps therefore deserve more theoretical attention than they have traditionally garnered. I hope that this work has helped to push the topic forward.

APPENDIX A

GENITIVE PLURAL GAPS IN MODERN GREEK

A search of two major Modern Greek dictionaries, *Lexiko tis neas ellinikis glossas* (LNEG) (Babinotis 1998) and the online version of *Lexiko tis koinis neoellinikis* (LKN) (1998)¹⁰³, uncovered genitive plural gaps in 2,141 distinct Modern Greek nouns. In this appendix I provide all of the genitive plural gaps, organized according to traditionally-defined inflection classes, with a comparison of how widespread that inflection class is in the language generally.

A1. Feminine nouns with nominative singular –α and plural –ες

Nouns in this inflection class represent two different stress patterns. Some nouns, like η ελπίδα ‘hope’, have stress on the penultimate syllable in the genitive plural, but on any of the final three syllables in the other cells. Other nouns, like η θάλασσα ‘sea’, have stress on the final syllable in the genitive plural.

¹⁰³ <http://www.komvos.edu.gr/dictionaries/dictadv/DictAdvSea.htm>

Example paradigms:

η ελπίδα 'hope'	SINGULAR	PLURAL	η θάλασσα 'sea'	SINGULAR	PLURAL
NOMINATIVE	ελπίδα	ελπίδες	NOMINATIVE	θάλασσα	θάλασσες
ACCUSATIVE	ελπίδα	ελπίδες	ACCUSATIVE	θάλασσα	θάλασσες
GENITIVE	ελπίδας	ελπίδων	GENITIVE	θάλασσας	θαλασσών
VOCATIVE	ελπίδα	ελπίδες	VOCATIVE	θάλασσα	θάλασσες

η σήραγγα 'tunnel'	SINGULAR	PLURAL	η ντομάτα 'tomato'	SINGULAR	PLURAL
NOMINATIVE	σήραγγα	σήραγγες	NOMINATIVE	ντομάτα	ντομάτες
ACCUSATIVE	σήραγγα	σήραγγες	ACCUSATIVE	ντομάτα	ντομάτες
GENITIVE	σήραγγας	σηράγγων	GENITIVE	ντομάτας	ντοματών
VOCATIVE	σήραγγα	σήραγγες	VOCATIVE	ντομάτα	ντομάτες

Table 45: Examples of Modern Greek feminine nouns with nominative singular –α and plural –ες

Quick stats:

- Babiniotis and Triantafillidis combined: 1,841 nouns with genitive plural gaps
- Only Triantafillidis:
 - 1,380 nouns with genitive plural gaps (88.5% of all genitive plural gaps)
 - 8,022 nouns in this inflection class (29.4% of all nouns)

Nouns with genitive plural gaps:

Key to the tables of genitive plural gaps	
Gpl	This column gives the dictionary which cited the relevant word as a genitive plural gap.
G	This column gives the dictionary (if any) which marked the relevant word as a genitive gap (both singular and plural), when the other dictionary marked it as a genitive plural gap.
Pl	This column gives the dictionary (if any) which marked the relevant word as a plural gap (genitive, nominative and accusative), when the other dictionary marked it as a gen. plural gap.
μπ	<i>Lexiko tis neas ellinikis glossas</i> (Babiniotis 1998)
τ	<i>Lexiko tis koinis neoellinikis</i> {, 1998 #767}

Word	Gpl	G	Pl	Word	Gpl	G	Pl
αβάντα	τ			αβανταδόρισα	τ		
αβάντσα, αβάντζα	τ			αγάντα	τ		
αγγειίτιδα	μπ			αγγουροντομάτα	τ		
αγγουροντοματο- σαλάτα	τ			αγιαστήρα	τ		
αγιαστούρα, αγιαστήρα	μπ/τ			αγκαλίτσα	μπ		
αγκιτάτσια	τ		μπ	αγκλίτσα	τ		
αγκούσα	τ		μπ	αγνωσία	τ		μπ
αγνωσιарχία	τ		μπ	αγοραφοβία	τ		μπ
αγορίνα	τ			αγουράδα	τ		
άγρα	τ		μπ	αγριόγατα	μπ/τ		
αγριόγιδα	τ			αγριόκοτα	τ		
αγριόπαπια	μπ/τ			αγριοφωνάρα	μπ/τ		
αγριόχηνα	τ			αγρύπνια	τ		
αδουατίνα	τ			αερόσκαλα	τ		
αετομάνα	τ			αετονύχισσα	τ		
αζαλέα	μπ			αηδόνα	τ		
Αιγαιοπελαγίτισσα	τρ			αιδοιοκολπίτιδα	μπ		
ακονόπετρα	μπ			ακούμπα	τ		
ακρίβεια	τ		μπ	ακροφοβία	τ		μπ
αλαλομάρα	τ			αλάνα	μπ		
αλαναρία	τ			αλατιέρα	μπ/τ		
αλατίστρα	τ			αλεπότρυπα	μπ/τ		
αλετροπόδα	μπ/τ			αλευρόκολλα	τ		μπ
αλήθεια	τ			αλιάδα	μπ/τ		
αλισίβα	τ		μπ	αλκόβα	τ		
αλμπάνισσα	τ			αλμύρα, αρμύρα	τ		μπ
αλμυρήθρα	τ			αλόγα	μπ/τ		
αλογομούρα	τ			αλογόμυγα	τ		
αλτάνα	μπ			αλτερνατίβα	μπ		
αλφαβήτα	τ		μπ	αλωνίστρα	τ		
αμάκα	τ		μπ	αμαξάδα	μπ/τ		
Αμερικάνα	τ			αμμόπετρα	μπ		
αμπάριζα	τ		μπ	αμπούλα	μπ		
αμυγδαλόφλουδα	μπ/τ			αμυγδαλόψιχα	τ		

Continued

Table 46: Genitive plural gaps among feminine nouns with nominative singular –α and plural –ες

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
αμυλόκολλα	τ			ανάβρα	μπ		
αναγούλα	τ		μπ	αναδουλειά	μπ		
ανακατωσούρα	μπ/τ			αναμπουμπούλα	μπ/τ		
ανανδρία	τ		μπ	αναξιοπιστία	τ		
ανάπαυλα	τ		μπ	αναποδιάρα	τ		
ανάσα	μπ/τ			ανατριχίλα	μπ/τ		
ανδρεία	τ		μπ	ανδροκρατία	τ		μπ
ανεμοδούρα	μπ/τ			ανεμοθύελλα	μπ/τ		
ανεμόσκαλα	μπ/τ			ανεμότρατα	μπ/τ		
ανεμώνα	τ			ανεργία	τ		μπ
ανημπόρια	τ			ανηφόρα	μπ/τ		
ανθρωπίλα	τ			αντάμισσα	τ		
αντάρα	τ		μπ	άντζα	τ		
αντζούγα	τ			αντζούγια	τ		
αντικάμαρα	μπ/τ			αντιπροπαγάνδα	τ		
αντράκλα	μπ			αντρεία	τ		
αντρέσα	τ			αντροπαρέα	τ		
αντροχωρίστρα	μπ			απαισιοδοξία	μπ		
απανταχούσα, πανταχούσα	μπ			απαξία	τ		μπ
απενταρία	τ			απανωσιά	μπ		
άπλα	μπ/τ			απλώστρα	μπ		
αποκοτιά	μπ			απόπειρα	μπ		
απροθυμία	τ			άργητα	τ		μπ
αργυροχοΐα	τ			αριστεροχέρα	τ		
αρλούμπα	τ			αρμόνικα	μπ/τ		
αρμπαρόριζα	μπ			αρμύρα	τ		
αρμυράδα	τ			αρμυρήθρα	τ		
αροκάρια	τ			αρραβωνιάρα	τ		
αρρώστια	μπ/τ			αρτίστα	μπ		
αρχικλέφτρα	τ			αρχιτεμπέλα	τ		
αρχινεύτρα	τ			αρχοντοπούλα	τ		
ασβεστίλα	τ			ασίκισσα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
ασκήμια	τ			ασπλαχνία	τ		
ασπρίλα	τ			Ασπροθαλασσίτισσα	τ		
αστυνομικίνα	μπ			ασχήμια	τ		
ατάκα	μπ/τ			ατζέντα	μπ/τ		
ατιμία	μπ/τ			ατρετσαρία	τ		
αυγίλα	τ			αυγουλιέρα	τ		
αυγουλίλα	τ			αυγοφέτα	τ		
αυγόφετα	τ			αυγόφλουδα	τ		
αυλόθυρα	τ			αυλόπορτα	μπ/τ		
αυτοάμυνα	τ		μπ	αυτοκινητάδα	τ		
αυτοκινητάμαξα	μπ			αυτοπροσωπογραφία	τ		
αφάνα	μπ			αφεντοπούλα	τ		
αφρόκρεμα	μπ/τ			άφτρα	μπ		
αχαμνάδα	τ			αχλάδα	μπ		
άχνα	τ		μπ	αχνάδα	τ		μπ
αψάδα	τ		μπ	βάβα	τ		μπ
βαβούρα	τ		μπ	Βαγγελίστρα	τ		
βάνα	μπ			βανίλια	μπ/τ		
βαρβατίλα	τ		μπ	βάρδια	μπ/τ		
βαρέλα	μπ			βαρεμάρα	μπ/τ		
βαριεμάρα	τ			βαριεστημάρα	τ		
βαριοπούλα	μπ			βάρκα	τ		
βαρκάδα	μπ			βαρκαρόλα	μπ/τ		
βαρυγκόμια	τ			βασιλόπιτα	τ		
βασιλοπούλα	τ			βασκαντήρα	μπ		
βάτα	μπ			βατίστα	μπ		
βατσίνα	μπ			βεγγέρα	τ		
βέδες	τ			βεζιροπούλα	τ		
βελάδα	μπ			βελέντζα	μπ		
βενζινόκολλα	τ			βεντάγια	τ		
βεντάλια	τ			βεντούζα	τ		
βέρα	τ			βερβερίτσα	τ		
βερμούδα	μπ			βία	τ		μπ
βιόλα	μπ			βιρτουόζα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
βιτσιόζα	τ			βλάχα	τ		
βλαχάρα	μπ			βλαχοπούλα	τ		
βοδάμαξα, βοϊδάμαξα	μπ			βόλτα	μπ		
βοσκοπούλα	τ			βότκα	τ		μπ
βούβα	τ			βουβαμάρα	τ		μπ
βούκα	τ			βουκαμβίλια, μπουκαμβίλια	μπ		
βουλγκάτα	τ			βουτυριέρα	μπ/τ		
βραδυγλωσσία	τ		μπ	βρακοζώνα	μπ		
βράσσικα	μπ			βρατσέρα	τ		
βρεχτούρα	μπ			βρόμα, βρώμα	μπ		
βρομιά	μπ			βρομόγλωσσα	μπ		
βρομοκουβέντα	μπ			βρομούσα	τ		
βρόχα	τ			βρυσομάννα, βρυσομάννα	μπ/τ		
γαβάθα	μπ			γαϊδούρα	μπ/τ		
γαϊδουροκαβάλα	τ			γαϊδουροκαβαλαρία	μπ/τ		
γαϊδουρότριχα	τ			γαϊδουροφωνάρα	μπ/τ		
γαϊτανοφρύδα	τ			γαλαζόπετρα	μπ/τ		
γαλατόπιτα	τ			γαλιάντρα	τ		
γαλοπούλα	μπ/τ			γαλότσα	τ		
γαμιόλα	τ			γάμπα	μπ/τ		
γάμπια	τ			γαργάρα	τ		
γαρδένια	μπ			γαρδούμπα	μπ/τ		
γαρνιτούρα	μπ/τ			γάστρα	μπ/τ		
γαστρεντερίτιδα	μπ			γαστρίτιδα	μπ		
γάτα	τ			γατίλα	τ		μπ
γειτονοπούλα	τ			γέννα	τ		
γενναιοδωρία	τ		μπ	γενναιοψυχία	τ		
γεννήτρα	μπ			γητεύτρα	τ		
γιάπισσα	τ			γιατρέσα	τ		
γιάτρισσα	τ			γιάφκα	μπ		
γιδόστρατα	μπ/τ			γκαβωμάρα	τ		
γκαζιέρα	τ			γκαζόζα	μπ/τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
γκαζόλαμπα	τ			γκάιντα	τ		
γκάμα (γκάμμα)	μπ/τ			γκανιότα	μπ/τ		
γκαρίλα	τ			γκαρνταρόμπα	μπ/τ		
γκαρσονιέρα	μπ/τ			γκάφα	μπ/τ		
γκιλοτίνα	μπ			γκίνια	τ		μπ
γκιόσα	μπ/τ			γκλάββα	μπ/τ		
γκλίτσα	μπ/τ			γκόμενα	μπ/τ		
γκουβερνάντα, λουβερνάντα	μπ			γκουστερίτσα	τ		
γκραβούρα	μπ			γκρανκάσα, γκραγκάσα	μπ		
γκρέκα	μπ			γκριμάτσα	μπ/τ		
γκρίνια, γρίνια	μπ/τ			γλαδιόλα	μπ		
γλείφτρα	τ			γλίστρα	μπ/τ		
γλίτσα	μπ			γλύκα	τ		
γλυκάδα	τ			γλυκοπατάτα	μπ		
γλυκόρριζα	μπ			γλυκοφιλούσα	τ		
γλυφάδα	τ			γλωσσίτσα	μπ		
γλωσσοκοπάνα	τ			γνώρα	τ		
γνώστρια	τ			γόβα	μπ/τ		
γόμα, γόμμα	μπ			γομαλάστιχα	τ		
γομολάστιχα, γομολάστιχα	μπ/τ			γόνδολα	μπ/τ		
γόπα	μπ/τ			γοργάδα	τ		
γοργόνα	μπ/τ			γούβα	τ		
γούλα	μπ/τ			γούνα	τ		
γούρνα	τ			γουρούνα	μπ/τ		
γουρουνότριχα	τ			γουστέρα	μπ		
γουστερίτσα	τ			γουστόζα	τ		
γουταπέρκα	τ			γραβιέρα	μπ/τ		
γραιγοτραμουντάνα	μπ			γρεγοτραμουντάνα	τ		
γρίλια	μπ/τ			γρίνια	τ		
γρίπη	τ		μπ	γυάλα	μπ/τ		
γυαλάδα	τ		μπ	γύμνια	τ		μπ
γυναικοκρατία	τ		μπ	γυναικοπαρέα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
γυναικούλα	μπ			γύρα	μπ/τ		
δαγκάνα	τ			δαμάλα	μπ		
δασκάλα	τ			δασκαλίτσα	μπ		
δαχτυλιδόπετρα	μπ			δειλία	τ		μπ
δείξα	τ			δεκαεννιάρια	τ		
δεκαεξάρα	τ			δεκαεφτάρα	τ		
δεκαοκτάρα	τ			δεκαοχτάρα	τ		
δεκαοχτούρα	τ			δεκατριάρια	τ		
δεκοχτούρα	μπ/τ			δερματοκόλλα	μπ/τ		
Δευτέρα	τ			διαβατάριτσα	τ		
διαβόλιτσα	τ			δίαιτα	τ		
διακοσάρα	μπ/τ			διαμαντόπετρα	μπ/τ		
διάρκεια	τ		μπ	διάτα	τ		
δίψα	τ		μπ	δόγα, δούγα	μπ		
δόμνα	μπ			δόνα	τ		μπ
δόξα	μπ/τ			δούλα	τ		
δράγα, ντράγα	μπ			δράκα	τ		
δρεζίνα	τ			δροσοσταλιά	μπ		
δρωτσιλά	μπ/τ			δύαρα	τ		μπ
εβδομηντάρια	τ			εβραιοπούλα	τ		
εγγλεζοπούλα	τ			εγγυοδοσία	τ		
Εγίρα	τ			εγκεφαλίτιδα	μπ		
έγνοια, έννοια	μπ/τ			εθνοκαπηλεία	τ		
εικοσάρα	μπ/τ			εικοτολογία	τ		
εκατοσάρα	τ			εκθειάστρια	τ		
ελαφρολογία	μπ			ελαφρόπετρα	μπ		
ελληνικούρα	μπ/τ			Ελληνοαμερικάνια	τ		
ελληνοπούλα	τ			εμπορία	τ		μπ
έννοια, έγνοια	μπ/τ			εξάρα	τ		
εξάστρα	τ			εξηντάρια	τ		
εξυπνάδα	μπ			εξώθυρα	τ		
εξώπορτα	μπ/τ			επαρχιωτοπούλα	τ		
επιείκεια	τ		μπ	επιπλοποιία	τ		μπ
εποποιία	τ			εργένισσα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
εσάρπα, σάρπα	μπ/τ			εσπέρα	τ		μπ
εσχάρα	τ			εταζέρα	μπ/τ		
Εύα	τ			ευγένεια	τ		
ευκολοπιστία	τ			ευφυΐα	τ		
εφταμηνίτισσα	τ			εφτάρα	τ		
έχθρα	τ			έχθρητα	τ		
εχθροπάθεια	τ			έχτρα	τ		
ζαβλακωμάρα	τ			ζαβομάρα	τ		
ζαλίκια	τ		μπ	ζάρα	μπ/τ		
ζαργάνα	μπ			ζαρίφισσα	τ		
ζαρντινέρα	τ			ζαρτιέρα	τ		
ζαφειρόπετρα	μπ/τ			ζαχαριέρα	μπ/τ		
ζαχαροπλάστεινα	τ			ζέστα	τ		
ζήλια	μπ/τ			ζηλιαρόγατα	τ		
ζήτα	τ	μπ	μπ	ζιβελίνα	τ		
ζιγκολέτα	μπ			ζιμπελίνα	μπ/τ		
ζίνα	τ			ζορζέτα	τ		
ζουζούνα	τ			ζούλα	μπ/τ		
ζούργκλα	μπ			ζουρλαμάρα	τ		
ζούρλια	τ			ζουρλοπαντιέρα	μπ/τ		
ζυθοποιία	τ			ζωοκομία	τ		μπ
ζωολογία	τ			ζωούλα	μπ		
ηθοποιία	τ		μπ	ημεράδα	τ		
ηρεμία	μπ			ησυχία	τ		μπ
θαλασσοκράτειρα	μπ			θαλασσομάνα	τ		
θέα	τ		μπ	θεομπαίχτρα	τ		
θερμοφόρα	μπ			θολούρα	τ		μπ
θράκα	τ		μπ	θρούμπα	μπ		
ίγκλα	μπ			ιντελιγκέντσια	τ		μπ
ίντριγκα	μπ/τ			ινφάντα	τ		
ίσκα	τ			ιχθυόκολλα	μπ/τ		
ιχθυόσκαλα	μπ			κάβα	μπ/τ		
καβαδούρα	τ			καβάλα	τ		
καβαλαρία, καβαλερία	μπ/τ			καβαλίνα	μπ/τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
καβίλια	τ			καβουρομάνα	μπ/τ		
καγκάγια	τ			καγκελόπορτα	μπ/τ		
καδρίλια	τ			καζάκα	μπ		
καζάρμα	μπ/τ			καζούρα	μπ/τ		
καθαρευουσιάννα	τ			καθεστηκυία	τ		
καθίστρα	τ			καΐλα	τ		
κακαράντζα	τ			κάκητα	μπ/τ		
κάκια	τ			κακίστρα	μπ/τ		
κακόγρια	τ			κακοκεφαλιά	μπ		
καλαθούνα	τ			καλαμαριέρα	τ		
καλαμοκάνα	τ			καλικάτουρα	τ		
κάλμα	τ		μπ	καλντέρα, καλδέρα	μπ		
καλοζωία	τ			καλοθελητής	τ		
καλοκαιρία, καλοκαιριά	τ		μπ	καλούμπα	μπ		
καλοφαγία	τ			καλτσοβελόνα	μπ		
κάμα	μπ			κάμαρα	τ		
καμαριέρα	τ			καμαρίλα	τ	μπ	
καμαρόπορτα	μπ/τ			καμαροφρύδα	τ		
καμέλια	τ			κάμερα	μπ/τ		
καμηλιέρισα	τ			καμιζόλα	μπ		
καμπάνια	μπ/τ			καμπανούλα	μπ		
κάμπια	μπ/τ			καμπούρα	μπ		
καμπουρομύτα	τ			κανακάρισα	τ		
κανάρα	τ			κανέλα, καννέλα	μπ/τ		
κάνουλα, κάννουλα	μπ/τ			καντάτα	μπ		
καντέντσα	μπ			καντήλα	μπ		
καντηλήθρα	μπ/τ			καντηλίτσα	τ		
καντρίλια	τ			καούρα	μπ/τ		
καπάντζα	τ			καπάτσα	τ		
καπελαδούρα	μπ/τ			καπελιέρα	μπ/τ		
καπελίνα	τ			καπιτάλα	τ		
κάπνα	τ		μπ	καπνικαρέα	τ		
καπνίλα	τ		μπ	καπνοσακούλα	μπ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
καπότα	μπ			καπριτσιόζα	τ		
καραβάνα	μπ			καραβέλα	μπ		
καραγκούνα	μπ/τ			καρακαηδόνα	τ		
καρακάξα	μπ			καραμούζα	μπ		
καραμπίνα	μπ			καραμπόλα	μπ/τ		
καραντίνα	τ		μπ	καραπουτάνα	μπ/τ		
καράφα	μπ			κάργα	τ		
κάργια	τ			καριέρα	μπ/τ		
καριερίστα	τ			καρικατούρα	μπ/τ		
καρίνα, καρένα	μπ			καριόλα	μπ/τ		
καρμανιόλα	τ		μπ	καρναβίτσα	τ		
καρότσα	μπ/τ			καρούλα	τ		
καρτίνα	τ			καρυδόπιτα	τ		
καρυδόφλουδα	μπ			καρυδόψιχα	τ		
καρφοβελόνα	μπ			κασάτα	τ		
κασετίνα	μπ			κασίδα	τ		
κάσκα	μπ			κασκαρίκα	τ		
κασόνα	μπ			Κασσάνδρα	τ		
καστανομάλλης	τ			καστρόπορτα	μπ/τ		
κατάντια	τ			κατάρα	μπ		
καταφρόνια	τ		μπ	κατεργάρα	τ		
κατηγορία	τ			κατηφόρα	μπ/τ		
Κατίνα	μπ/τ			κατοστέρα	τ		
κατρακύλα	τ		μπ	κατραπακιά	μπ		
κατσάδα	μπ/τ			κατσαρόλα	μπ		
κατσίκια	μπ			κατσούφης	τ		
καύλα	μπ/τ			καύτρα	μπ		
καυχησιάρα	τ			καφετιέρα	μπ/τ		
κάψα	μπ			καψάλα	τ		
κάψουλα	μπ			καψούρα	μπ/τ		
καπούρης	τ			κενοφοβία	τ		
κεντήστρα, κεντήτρα	μπ			κερκόπορτα	τ		
κεφαλογραβιέρα	τ			κιλοβατώρα	μπ		
κιμαδόπιτα	μπ			κιτρινίλα	μπ/τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
κιτσαρία	μπ			κλαδευτήρα	τ		
κλάκα	μπ/τ			κλανιάρης	τ		
κλαπάτσα	τ			κλάρα	μπ		
κλασικούρα	μπ			κλάψα	μπ/τ		
κλειδαρότρυπα	μπ/τ			κλεισούρα	μπ/τ		
κληματόβεργα	μπ			κλήρα	τ		
κλούβα	τ			κόβα	τ		
κόκα	τ			κοκάλα, κοκκάλα	μπ		
κοκεταρία	τ		μπ	κοκκινίλα	μπ/τ		
κοκκινομάλλα	τ			Κοκκινোসκουφίτσα	τ		
κοκόνα	τ			κοκότα	τ		
κόλα	τ		μπ	κολαρίνα	τ		
κολεκτίβα, κολεχτίβα	μπ/τ			κόλλα	μπ/τ		
κολοκύθα	τ			κολομπίνα	μπ		
κολόνια	μπ/τ			κολορατούρα	τ		
κομμάρα	μπ/τ			κομμούνα	τ		
κομότα	μπ			κομπάρσα	τ		
κομπίνα	μπ/τ			κομπιναδόρισσα	τ		
κομπογιαννίτισσα	τ			κομπόστα	μπ		
κόμπρα	μπ			κομπρέσα	μπ		
κομούνα	μπ			κονκάρδα	μπ		
κόνζα	μπ/τ			κονόμα	μπ		
κονσόλα	μπ			κοντανάσα	τ		
κοντεσίνα	μπ			κοντολαίμα	τ		
κοντοστούπα	τ			κοντούλα	τ		
κοντούρα	μπ			κόντρα	μπ/τ		
κοτρώνα	μπ			κοπάνα	μπ/τ		
κοπέλα	μπ/τ			κόπια	τ		μπ
κόρα	μπ/τ			κορδελιάστρα	μπ		
κόπιτσα	μπ			κόρνα	μπ		
κόσα	μπ/τ			κότα	μπ		
κοτόπιτα	τ			κοτσάνα	μπ/τ		
κοτσίδα	μπ			κουβέντα	μπ/τ		
κουβερτούρα	τ		μπ	κουδουνίστρα	μπ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
κουζουλάδα	τ			κουΐντα	μπ		
κουκουβάγια	μπ			κουκούλα	μπ		
κουκουνάρα	μπ/τ			κουλαμάρα	τ		
κουλούρα, κουλλούρα	μπ			κουλοχέρα	τ		
κουλτούρα	μπ/τ			κουλτουριάρα	τ		
κουνέλα	μπ			κούνια	μπ/τ		
κουνίστρα	τ			κουνουπιέρα	τ		μπ
κούπα	μπ/τ			κούρα	τ		μπ
κουράδα	τ			κουραμάνα	μπ/τ		
κουρέλα	τ			κουρελαρία	μπ/τ		
κούρνια	μπ			κούρσα	τ		
κούτα	μπ/τ			κουτάλα	μπ/τ		
κουταμάρα	μπ/τ			κουτουράδα	τ		
κούτρα	μπ/τ			κουτροβάλα	μπ/τ		
κουτσαμάρα	τ			κουτσαύτα	τ		
κουτσοδόντα	τ			κουτσομούρα	μπ		
κουτσομπόλα	τ			κουτσομούτης	τ		
κουτσονούρα	τ			κουτσουκέλα	μπ/τ		
κουφάλα	τ			κουφαμάρα	τ		
κουφοξυλία	μπ			κόφα	τ		μπ
κοψοχέρα	τ			κράμπα	μπ		
κρασίλα	τ		μπ	κρασοκανάτα	μπ/τ		
κρασοκανάταξ	μπ			κρεατίλα	τ		
κρεατόμυγα	μπ/τ			κρεατόπιτα	τ		
κρεατόσουπα	τ			κρεβατίνα	μπ/τ		
κρεβατοκάμαρα	τ			κρεβατομουρμούρα	τ		μπ
κρεμάλα	μπ/τ			κρεμμυδίλα	τ		
κρησάρα	μπ/τ			κρουαζιέρα	τ		
κρούστα	τ			κυράτσα	μπ/τ		
κυρούλα	μπ/τ			κωλοπηλάλα	μπ		
κωλοτούμπα	μπ/τ			λάβρα	τ		μπ
λάβρα	τ		μπ	λαγάνα	μπ		
λαγουδέρα	τ			λαγωφθαλμία	τ		
λαγωχειλία	τ			λαδίλα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
λαδόκολλα	μπ			λαθραλιεία	τ		μπ
λαϊκούρα	μπ/τ			λαϊλαπα	μπ		
λαιμαργία	τ			λάκα	τ		μπ
λακέρδα	μπ			λάκκα	μπ/τ		
λακκούβα	μπ/τ			λαλαγγίτα, λαλαγγίδα	μπ/τ		
λάμα	μπ			λάμια	τ		
λανάρα	τ			λάντζα, λάντσα	μπ/τ		
λαντζιέρα	τ			λαοθάλασσα	μπ		
λαρυγγίτιδα	μπ			λατάνια, λατανία	μπ		
λατινικούρα	τ			λάτρα	τ		μπ
λάτρης	τ			λαύρα	τ		
λαχτάρα	μπ/τ			λεβάντα	μπ		
λεβεντογέννα	μπ/τ			λεβεντομάνα	τ		
λεβεντοπνίχτρα	μπ/τ			λεία	τ		
λεμονίτα	τ			λεμονόκουπα	μπ/τ		
λεμονόφλουδα	μπ			λέπρα	τ		μπ
λέρα	τ			λετσαρία	τ		μπ
λεχώνα	μπ		μπ	λιακάδα	μπ		
λιάστρα	μπ			λιβελούλα	μπ		
λίγδα	μπ			λίγκα	μπ		
λιγούρα	μπ/τ			λιγωμάρα	τ		
λιθάγρα	μπ			λίμα	μπ		
λινάτσα	μπ			λιομαζώχτρα	μπ		
λοβιτούρα	μπ/τ			λογικοκρατία	τ		μπ
λοκάντα	μπ/τ			λοκομοτίβα	τ		
λόξα	μπ/τ			λόρδα	μπ/τ		
λότζα	τ			λουίζα	μπ/τ		
λούμπα	τ			λουμπάρδα, λομβάρδα, λομπάρδα	μπ		
λουμπίνα	τ			λούπα	μπ		
λουτροπετσέτα	μπ			λούτσα	μπ/τ		
λούφα	τ		μπ	λώβα	μπ		
λωλάδα	μπ			μαγειρίτσα	μπ/τ		
μαγεύτρα	μπ/τ			μάγια	μπ/τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
μαγιονέζα	μπ/τ			μαγκιόρα	τ		
μαγκίτισσα	τ			μαγκούρα	μπ/τ		
μαγούλα	μπ/τ			μαεστρία	μπ		
μαζούρκα	μπ/τ			μαζόχα	τ		
μαζόχας	μπ			μαϊστρα	τ		
μαϊστροτραμουντάνα	μπ			μάκα	τ		
μακαρίτισσα	τ			μακροζωία	τ		μπ
μαλαγάνα	μπ/τ			μαλάγρα	μπ		
μαλάκα	τ			μαλαπέρδα	τ		
μαλάρια	τ		μπ	μαλαφράντζα	τ		μπ
μαλλούρα	τ			μαλοτίρα	μπ		
μαλτεζόπλακα	τ			μάνα	τ		
μαναβέλα	τ			μανάβισσα	τ		
μανέλα	τ			μανέστρα	μπ/τ		
μάνητα	τ		μπ	μανία	τ		
μανιβέλα	μπ/τ			μανιέρα	τ		μπ
μάνικα	μπ/τ			μανικιουρίστα	τ		
μανιφατούρα	μπ/τ			μανόλια	τ		
μανούβρα	μπ/τ			μανούρα	τ		
μαντάμα	μπ/τ			μανταρίστρα	τ		
μαντέκα	τ		μπ	μαντζουράνα	τ		
μαντόλα	τ		μπ	μαντολινάτα	μπ/τ		
μαντόνα	τ			μάντρα	τ		
μαούνα	μπ/τ			μάππα	μπ/τ		
μαργαρίτα	τ			μαρέγκα	τ		μπ
Μαρία	τ			μαρίνα	μπ/τ		
μαρινάτα	μπ/τ			μαριχουάνα	τ		μπ
μάρκα	μπ/τ			μαρκίζα	μπ/τ		
μαρμάγκα	μπ/τ			μαρμελάδα	μπ		
μαρμίτα	τ			μαρουλοσαλάτα	μπ		
μάσα	μπ/τ			μασέλα	τ		
μασίνα	τ			μάσκα	τ		
μασκαράτα	μπ/τ			μαστοειδίτιδα	μπ		
μαστοράντζα	τ		μπ	μαστόρισσα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
μαστούρα	μπ/τ			ματζουράνα	μπ/τ		
ματρόνα	μπ/τ			ματσαράγκα	τ		
ματσόλα	μπ/τ			ματσούκα	τ		
μαυραγορίτισσα	τ			μαυρίλα	μπ/τ		
Μαυροθαλασσίτισσα	τ			μαυρομάλλης	τ		
μαυρομάλλικο	τ			μαυρομαντιλούσα	μπ		
μαυροφόρα	τ			μαυροφορούσα	τ		
μαφιόζα	τ			μέγαιρα	τ		
μεγαλοκοπέλα	μπ/τ			μεγαλουσιάνα	τ		
μεγαλοφυΐα	τ			μεζονέτα	τ		μπ
μεζούρα	μπ			μειξοπαρθένα, μιξοπαρθένα	μπ		
Μέκκα	τ			μελίγκρα	μπ/τ		
μελιτζάνα	τ			μελιτζανοσαλάτα	τ		
μελόντικα	μπ/τ			μελόπιτα	μπ/τ		
μένουλα	μπ			μέντα	μπ/τ		
μερούλα	μπ			μεσόπορτα	μπ/τ		
μεσσαλίνα	τ			μεταξότριχα	μπ		
μετάνοια	μπ			μετζεσόλα	τ		
μετρέσα	μπ/τ			μηδενικούρα	μπ/τ		
μηλόπιτα	τ			μηχανότρατα	μπ/τ		
μίζα	τ			μιζέρια	μπ/τ		
μικρομάνα	τ			μικρόνοια	τ		
μικροτυπία	μπ			μιλιόρα	μπ		
μιμόζα	τ			μίνια	μπ		
μινιατούρα	μπ/τ			μισμίζα	τ		
μογγόλα	τ			μόδα	μπ/τ		
μοιρολογήτρα	τ			μοιρολογίστρα	τ		
μόκα	τ		μπ	μολόχα	μπ/τ		
μονέδα	μπ/τ			μονταζιέρα	μπ		
μοντέλα	μπ/τ			μόρα	τ		
μορταδέλα, μουρταδέλα	μπ/τ			μόρτισσα	τ		
μόστρα	μπ/τ			μοτορόλα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
μουβιόλα	τ			μούγγα	τ		μπ
μουγγαμάρα	τ		μπ	μούλα	τ		
μουλάρα	τ			μούμια	τ		
μουνόψειρα	μπ/τ			μούντζα, μούτζα	μπ/τ		
μουντζούρα	μπ/τ			μούργα	τ		μπ
μουργέλα	μπ/τ			μούρλα	μπ/τ		
μούρλια	τ		μπ	μουρμούρα	μπ/τ		
μουρντάρα	τ			μουρούνα	μπ		
μουρταδέλα	τ			μουρτζούφλα	τ		
μουσαφίρισα	τ			μουσίτσα	μπ/τ		
μουσούδα	τ			μουστάρδα	μπ		
μουσταρδιέρα	μπ			μουστόγρια	τ		
μούτζα	τ			μουτζούρα	τ		
μουτσούνα	μπ/τ			μουτσουνάρα	μπ		
μούφα	τ			μουφλούζα	τ		
μούχλα	τ		μπ	μπαγαζιέρα	τ		
μπαγαμπόντισσα	τ			μπαγαπόντισσα	τ		
μπαγιαντέρα	μπ			μπαγιατίλα	τ		μπ
μπαγιονέτα	μπ			μπαγκαζιέρα	μπ/τ		
μπαγκατέλα, μπακατέλα	μπ/τ			μπαγκέτα	μπ		
μπάζα	τ			μπάκα	μπ/τ		
μπακάλισσα	τ			μπάλα	τ		
μπαλαίνα, μπαναίλα	μπ			μπαλαλάικα	μπ/τ		
μπαλάντα	μπ/τ			μπαλαντέζα	μπ/τ		
μπαλαρίνα	μπ			μπαλάφα	μπ		
μπαλκονόπορτα	τ			μπάμια	μπ/τ		
μπαμπέσα	τ			μπαμπόγρια	τ		
μπανανόφλουδα	μπ/τ			μπανιέρα	τ		
μπάνκα, μπάγκα	μπ/τ			μπανκανότα	μπ		
μπάντα	μπ/τ			μπαντάνα	μπ/τ		
μπαντανόβουρτσα	μπ			μπαντιέρα	τ		
μπάρα	μπ/τ			μπαρμπαρέσα	τ		
μπαρμπουτιέρα	μπ/τ			μπαρόβια	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
μπαρούμα	μπ/τ			μπαρούφα	τ		μπ
μπατάλα	τ			μπατζανάκισσα	τ		
μπατίρισσα	τ			μπατονέτα	μπ/τ		
μπατσαρία	τ			μπάφα	τ		
μπαχατέλα	τ			μπεκιάρισσα	τ		
μπεκροκανάτα	μπ/τ			μπελαμάννα	τ		
μπελαντόνα	μπ/τ			μπέμπα	μπ/τ		
μπεμπέκα	μπ/τ			μπερλίνα	τ		μπ
μπέρτα	μπ/τ			μπετονιέρα	τ		
μπετούγια	τ			μπιγκόνια, βιγόνια, βεγόνια	μπ		
μπιζουτιέρα	τ			μπίλια	μπ/τ		
μπιμπίλα	τ			μπίρα	μπ/τ		
μπιρίμπα	τ		μπ	μπιρμπίλα	τ		
μπλούζα	τ			μπλόφα	μπ/τ		
μπογιά	μπ			μποέμισσα	τ		
μπόλια	μπ/τ			μπόμπα	τ		
μπομπάρδα	μπ/τ			μπομπίνα	μπ		
μπομπονιέρα	τ			μπομπότα	μπ/τ		
μπονάτσα	τ			μπόρα	μπ/τ		
μπορντούρα	μπ/τ			μπότα	τ		
μποτίλια	μπ			μπουγάδα	μπ/τ		
μπουγάτσα, μπουγάτσα	μπ/τ			μπουγιαμπέσα	μπ/τ		
μούκα	μπ/τ			μπουκαδούρα	τ		
μπουκάλα	μπ			μπουκαμβίλια	τ		
μπουκαπόρτα	μπ/τ			μπουκίτσα	μπ		
μούκλα	τ			μούλα	τ		
μπουλντόζα	μπ/τ			μπουλούκα	τ		
μούμα	μπ/τ			μπουμπούκα	τ		
μπουμπουνιέρα	τ			μπουνάτσα	τ		
μούρδα	μπ/τ			μπουρδελότσαρκα	μπ/τ		
μπουρμπουλήθρα	μπ/τ			μπουρνέλα	τ		
μπουτονιέρα	τ			μπουχάρα	μπ		
μπόχα	μπ/τ			μπρατσέρα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
μπροσούρα	μπ			μπροστάντζα	μπ/τ		
μπροστέλα	μπ/τ			μπροστινέλα	τ		
μπρουντζίνα	τ			μυγοσκοτώστρα	μπ/τ		
μυϊτιδα	μπ			μυλόπετρα	τ		
μύξα	τ			μυξιάρα	τ		
μυρμηγκότρυπα	μπ			νέγρα	τ		
νέκρα	τ		μπ	νεκρόκασα	μπ		
νεκροφοβία	μπ			νένα	μπ/τ		
νεραγκούλα	μπ/τ			νεράιδα	μπ		
νεραντζούλα	μπ			νερόκοτα	μπ/τ		
νερομάννα, νερομάνα	μπ/τ			νερομολόχα	μπ		
νεροφίδα	τ			νησιωτοπούλα	τ		
νίλα	μπ/τ			νοθεία	μπ		
νοικοκυροπούλα	τ			νομενκλατούρα	μπ/τ		
νόνα	τ			νόρμα	τ		
νότα	τ			νουβέλα	μπ/τ		
νουγκατίνα	τ			νούλα	τ		μπ
νταβανόσκουπα	τ			ντάλια	μπ/τ		
ντάμα	μπ/τ			νταμιτζάνα	μπ		
ντάνα	μπ			νταρντάνα	μπ/τ		
ντελμπεντέρισσα, ντερμπεντέρισσα	τ			ντίβα	μπ/τ		
ντιρεκτίβα	μπ/τ			ντουζιέρα, ντουσιέρα	μπ/τ		
ντουζίνα	τ			ντουντούκα	τ		
ντρεζίνα	τ			ντρίμπλα, ντρίπλα, τρίπλα	μπ		
ντρίπλα	τ			νύστα	τ		
νυφίτσα	μπ			ξαγρύπνια	τ		
ξανθομάλλης	τ			ξανθομάλλικο	τ		
ξανθούλα	μπ			ξάπλα	μπ/τ		
ξαπλώστρα	μπ/τ			ξεβλάσταρο	μπ		
ξεκούτα	τ			ξεματιάστρα	τ		
ξεμυαλίστρα	τ			ξενομερίτισσα	τ		
ξενύχτισσα	τ			ξεπατικωτούρα	τ		μπ

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
ξέρα	τ			ξεραΐλα	τ		
ξερόλα	τ			ξεροφαγία, ξηροφαγία, ξηροφαγιά	τ		μπ
ξετσιπωσιά	μπ			ξευτίλα	μπ		
ξεφτίλα	τ			ξηρά	μπ		
ξινήθρα	τ			ξινίλα	μπ/τ		
ξόβεργα	τ			ξομπλιάστρα	μπ/τ		
ξούρα	μπ/τ			ξυλεία	τ		μπ
ξυλόβιδα	μπ/τ			ξυλόκολλα	μπ/τ		
ξυλόκοτα	μπ/τ			ξυλόπροκα	τ		
ξυλόσομπα	τ			ξωμερίτισσα	τ		
οβίδα	μπ			Οβραία	τ		
ογδοντάρα	τ			οδοντόβουρτσα	τ		
οδοντόκρεμα	τ			οδοντόπαστα	τ		
οδοποιία	τ			οδύσσεια	τ		μπ
όζα	τ			οικοδέσποινα	τ		
οινοποιία	τ		μπ	οκτάβα	τ		
οκτάβα, οχτάβα	μπ			ομελέτα	μπ/τ		
οπαλίνα	μπ			όπερα	μπ/τ		
οπερέτα	μπ/τ			οργαντίνα	τ		μπ
οργαντίνα	τ			όρκα	μπ		
ορμήνια	τ			ορντινάντσα	μπ/τ		
ορντινάτσα	τ			ορφάνια	τ		
ορχιδέα	τ			ορχίτιδα	μπ		
όστρια	τ		μπ	ουάου	τ		
ουβερτούρα	μπ			ούγια	μπ/τ		
ουλίτιδα	μπ			ουρηθρίτιδα	μπ		
ουρητηρίτιδα	μπ			όχεντρα	τ		
οχτάβα	τ			οχταμηνίτισσα	τ		
οχτάρα	τ			όχτρητα	τ		
παγαπόντισσα	τ			παγκρεατίτιδα	μπ		
παγόδα	μπ/τ			παγωνία	μπ		
παιδούλα	μπ			πάλα	μπ		
παλάβρα	μπ/τ			παλαβωμάρα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
παλιατζούρα	μπ/τ			παλιάτσα	τ		
παλιατσαρία, παλιατζαρία	μπ/τ			παλιοβρόμα	μπ		
παλιογυναίκα	μπ			παλιοκουβέντα	μπ/τ		
παλιοπαρέα	τ			παλιοσκρόφα	τ		
πάμπα	τ			πάνα	μπ		
πάντα	τ			παντζουρόβεργα	μπ		
παντιέρα	τ			παντόφλα, παντούφλα	μπ		
παντρειά	μπ			παντρολογίστρα, παντρολογήτρα	μπ		
παπαγαλία	μπ			παπαδίτσα	τ		
παπάρα	μπ			παπαρούνα	μπ		
πάπια	μπ/τ			πάπρικα	μπ/τ		
παραδουλεύτρα	μπ			παραμάννα, παραμάννα	μπ		
παραπονιάρια	τ			παράτα	μπ		
παρηγόρια, παρηγορία, παρηγοριά	τ		μπ	παρκετέζα	μπ/τ		
πάρλα	μπ/τ			παρλαπίπα	μπ/τ		
παρλάτα	τ			παρμεζάνα	μπ/τ		
παροδοντίτιδα	μπ			παρόλα	μπ/τ		
παρτιτούρα	μπ/τ			παρτούζα	μπ/τ		
πάσα	μπ/τ			πασαρέλα	μπ		
πασιέντσα, πασιέντζα	μπ/τ			πάστα φλόρα	τ		
παστίλια	μπ/τ			πάστρα	τ		μπ
πασχαλίτσα	μπ/τ			πατατούκα	μπ/τ		
πατέντα	μπ			πατερίτσα	μπ		
πατιτούρα	τ			πατούρα	τ		
πατρόνα	μπ			πατσαβούρα	μπ		
πεζούλα, πεζούρα	τ		μπ	πείνα	τ		μπ
πεινάλα	τ			πελελάδα	τ		
πελότα	μπ			πελούζα	μπ		
πενηντάρια	τ			πεντακοσάρα	μπ/τ		
πεντάλφα	τ			πεντάρια	μπ/τ		
πενταροδεκάρες	μπ/τ			πεπονόφλουδα	μπ/τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
περγαμνηνοποιία	μπ			πέργκολα	μπ		
περδικούλα	μπ/τ			περηφάνια	τ		μπ
περίσσεια	τ		μπ	περιστερώνα	τ		
πέρλα	τ			περπατούρα	τ		
πεσκαντρίτσα	μπ			πέστροφα	μπ/τ		
πετούγια	τ			πετούνια	μπ		
πετρελαιόπισσα	τ		μπ	πετροκαλαμίθρα	τ		
πετροπέρδικα	μπ/τ			πηλάλα, πιλάλα	τ		μπ
πήχτρα	τ			πιάτσα	μπ/τ		
πίκα	μπ/τ			πίκρα	μπ		
πικράδα	τ		μπ	πικρίλα	τ		μπ
πιλοτιέρα	μπ			πιπεριέρα	μπ		
πιπίλα	μπ			πιρόγα	μπ		
πισίνα	τ			πίτσα	μπ		
πιτσιλάδα	τ			πιτσούνα	μπ		
πλακόπιτα	μπ			πλατφόρμα	μπ		
πλαφονιέρα	μπ			πλεμπάγια	μπ/τ		
πνευματολογία	μπ			πνιγούρα	μπ		
ποδάγρα	μπ			ποδαρίλα	τ		μπ
πόζα	τ			πολυδιψία	τ		μπ
πολυθρόνα	μπ			πολυκαιρία	τ		μπ
πολυκαρπία	τ			πολυτεκνία	τ		
πολυτοκία	τ			πολυχρησία	τ		
πολωνέζα	τ		μπ	πομάδα	μπ		
πομόνα	τ			πόμπα	τ		
ποντικότρυπα	μπ/τ			πορφύρα	μπ		
ποταμολογία	τ			ποτίστρα	μπ		
πούδρα, πούντρα	μπ			πουδριέρα, πουντριέρα	μπ/τ		
πουκαμίσα	μπ			πουλάδα, πουλακίδα	μπ		
πούλια	μπ/τ			πούλπα	τ		
πούντα	τ			πουντριέρα	τ		
πουσιτιά	μπ			πούστρα	τ		
πουτάνα	μπ/τ			πουτανιά	μπ		
πουτανιέρα	τ			πουτίγκα	μπ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
πραλίνα	μπ			πραμάτεια	μπ/τ		
πρασινίλα	μπ/τ			πρέζα	μπ		
πρεμιέρα	μπ/τ			πρεμούρα	μπ/τ		
πρεσβυτέρα	μπ			πριγκιποπούλα	τ		
πρίζα, μπρίζα	μπ			πριμαντόνα	μπ		
πριονοκορδέλα	μπ			πρόβα	τ		
προβατίλα	τ		μπ	προβατίνα	μπ		
προβοκάτσια	μπ/τ			πρόγκα	μπ		
πρόζα	τ		μπ	πρόκα	μπ		
προλετάρια	τ			προπαγάνδα	μπ/τ		
προστασία	μπ			προστάτισσα	τ		
προστατίτιδα	μπ			προστυχάντζα	μπ/τ		
προστυχόφατσα	τ			προσφυγοπούλα	τ		
πρυμάτσα	μπ/τ			πρωία	τ		μπ
πρωτάρα	τ			πρωτευουσιάνα	τ		
πρωτόγεννα	τ		μπ	πυγμαία	τ		
πύρα	τ		μπ	πυράδα	τ		
πυρόσφαιρα	τ			ραβδιστήρα	τ		
ράδα	τ			ραουλιέρα	τ		
ράσπα	τ			ράτσα	μπ/τ		
ραχίτιδα	μπ			ραχούλα	μπ		
ρεβεράντζα	τ			ρεβερέντζα, ρεβεράντζα	μπ		
ρεβιθάδα	μπ			ρέγγα	τ		
ρέγουλα	τ		μπ	ρεκλάμα	τ		
ρεμούλα	μπ/τ			ρεμούλκα	τ		
ρέντα	τ			ρεντιγκότα	τ		
ρεντικότα	τ			ρεντινγκότα, ρεντιγκότα	μπ		
ρεπλίκα	τ			ρεπούμπλικα, ρεμπούμπλικα	μπ/τ		
ρεπουμπλικάνα	τ			ρετσέτα	τ		
ρετσίνα	μπ			ρετσινόκολλα	τ		
ρέφουλα	τ			ρέχα	τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
ρήγας	τ			ρηγοπούλα	τ		
ρημάδα	τ			ρητινόπισσα	μπ		
ρηχία	τ			ριζάγρα	τ		
ριζονευρίτιδα	μπ			ριμάδα	τ		
ριμάτα	μπ			ρινίτιδα	μπ		
ρόκα	μπ/τ			ροκάνα	μπ/τ		
ροκιά	μπ			ρομάντζα	μπ/τ		
ρόμπα	τ			ρομπόλα	τ		μπ
ρότα	μπ/τ			ροτόντα	μπ/τ		
ρούγα	μπ/τ			ρουκάνα	τ		
ρουτίνα	τ		μπ	ρουφήχτρα	τ		
ρουφιάνα	τ			ροχάλα	μπ/τ		
ρυμούλκα	τ			σακαράκα	μπ/τ		
σακολέβα	τ			σακοράφα	τ		
σακούλα	μπ/τ			σάλα	μπ/τ		
σαλαμάστρα	μπ			σαλαμούρα	τ		μπ
σαλατιέρα	μπ/τ			σαλιάρα	μπ		
σαλιαρίστρα	τ			σαλτσιέρα	τ		
σάμπα	τ		μπ	σαμπάνια	μπ/τ		
σαμπανιέρα	τ			σαμπούκα	μπ		
σανιδόσκαλα	μπ			σαντακρούτα	τ		
σαντέζα	τ			σάουνα	τ		
σαπίλα	τ		μπ	σαπουνόπερα	μπ/τ		
σαπουνόπετρα	μπ			σαπουνόφουσκα	μπ/τ		
σαπωνοποιία	μπ			σάρα	τ		
σαρανταποδαρούσα	τ	μπ		σαραντάρα	τ		
σάρπα	τ			σαστιμάρα	τ		
σαστισμάρα	τ			σατακρούτα, σαντακρούτα	μπ/τ		
σάχλα	τ			σβάστικα	μπ/τ		
σβελτάδα	τ		μπ	σέντρα	τ		
σεξουάλα	τ			σέπια	τ		μπ
σέρα	μπ			σερβιτόρα	τ		
σερενάτα	μπ/τ			σερπαντίνα	μπ/τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
σέσουλα	μπ/τ			σηκωμάρα	μπ		
σημαδούρα	μπ/τ			σιγκούνα, σεγκούνα	μπ		
σιγουράδα	τ			σιδερώστρα	μπ		
σιλουέτα	τ			σιφονιέρα	τ		
σιχαμάρα	τ		μπ	σκακιέρα	τ		
σκάλα	τ			σκάντζα	τ		
σκαρλατίνα	μπ			σκαρταδούρα	τ		
σкасίλα	τ			σκατίλα	τ		
σκατούλα	τ			σκλαβοπούλα	τ		
σκληράδα	τ			σκληρίτιδα	μπ		
σκορδίλα	τ			σκορδοκαήλα	μπ		
σκορδοκαίλα	τ			σκορπίνα	μπ		
σκότα	τ			σκοτεινάδα	τ		μπ
σκοτισμάρα	μπ			σκοτούρα	μπ/τ		
σκοτώστρα	τ			σκουληκαντέρα	μπ		
σκούνα	μπ			σκουντούφλα	μπ/τ		
σκουπιδιάρα	μπ/τ			σκούφια	μπ/τ		
σκουφίτσα	μπ			σκύλα	τ		
σκυλίτσα	μπ			σκυλομούρα	τ		
σμιχτοφρύδα	τ			σμπόμπα	τ		
σνομπαρία	μπ/τ			σόδα	τ		
σοκακιάρα	τ			σοκολατίνα	μπ		
σόντα	μπ			σοροκάδα	μπ		
σούβλα	τ			σουετίνα	τ		
σούζα	μπ/τ			σουίτα	τ		
σουλτάνα	μπ/τ			σουλτανίνα	μπ/τ		
σούμα	μπ/τ			σουμάδα	μπ		
σούπα	τ			σουπιέρα	τ		
σούρα	μπ			σουσουράδα	μπ		
σούστα	τ			σούφρα	μπ/τ		
σουφραζέτα	τ			σοφεράντζα	τ		
σπαγγεταρία	τ			σπαγγετερία	τ		
σπάθα	μπ			σπάλα	τ		
σπανομαρία	τ			σπαρίλα	μπ/τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
σπασίκλα	τ			σπέκουλα	μπ/τ		
σπεκουλάτσια	μπ			σπεράντσα, σπεράντζα	τ		
σπιούνα	τ			σπονδυλαρθρίτιδα	μπ		
σπόντα	μπ/τ			στάλα	μπ/τ		
σταξιά	μπ			σταυρομάννα	μπ		
σταφυλόρωγα	μπ			σταχτοκουλλούρα	μπ		
Σταχτοπούτα	τ			στεατοπυγία	μπ		
στέγνα	τ			στέκα	τ		
στεναχώρια	τ			στενούρα	τ		
στενοχώρια	τ			στέρνα	μπ		
στοματίτιδα	μπ			στραβωμάρα	τ		
στράκα	μπ/τ			στρακαστρούκα	τ		
στράτα	μπ/τ			στρατούλα	μπ/τ		
στρατώνα	τ			στρούγκα	μπ		
στρουκτούρα	μπ			στρωματσάδα	μπ		
συκομαΐδα	τ			συμβία	μπ/τ		
συμπεθέρα	τ			συμπιεστότητα	μπ		
συμπόνια	τ		μπ	συρματόβεργα	μπ		
συρταριέρα	μπ/τ			σφαλιάρα	τ		
σφιχτοχέρα	τ			σφολιάτα	μπ		
σφουγγαρίστρα	μπ			σχάρα, σκάρα	μπ		
ταβανόπροκα, νταβανόπροκα	μπ			ταβανόσκουπα, νταβανόσκουπα	μπ/τ		
ταχινόσουπα	μπ			ταβερνιάρισσα	τ		
τάβλα	μπ			τάγια	τ		
ταγκίλα	τ			ταλαιπώρια	τ		
τάλια	τ			ταλιατέλες	τ		
ταμπακιέρα	μπ/τ			τανάλια	μπ		
ταξιδεύτρα	τ			τάρα, ντάρα	μπ		
ταραντέλα	μπ			ταραντούλα	μπ		
ταρταρούγα	μπ			ταστιέρα, ταστέρα	μπ		
ταφόπετρα	μπ/τ			ταφόπλακα	μπ/τ		
τέμπερα	τ			τενοντίτιδα	μπ		
τερακότα	τ			τεσσάρα	μπ/τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
τετρακοσάρα	τ			τεχνίτρα	τ		
τζίβα, τσίβα	μπ/τ			τζιριτζάντζουλα, τσαριτσάντζουλα	μπ/τ		
τζίφρα	μπ			τζούρα	μπ/τ		
τζουτζούκα	τ			τιτίζα	τ		
τοκάτα	μπ			τονοσαλάτα	τ		
τοστιέρα	τ			τουβούλα	τ		
τουλούμπα	μπ/τ			τούμπα	μπ		
Τουρκάλα	μπ			τουρκογύφτισσα	τ		
τουρκομερίτισσα	τ			τουρκοπούλα	τ		
τούρλα	τ		μπ	τούρνα	τ		
τουρτούρα	τ			τράβα	μπ		
τραγάνα	μπ			τραγιάσκα	μπ		
τραγίλα	τ		μπ	τράκα	μπ/τ		
τρακατρούκα, στρακαστρούκα	μπ/τ			τραμουντάνα	τ		μπ
τράμπα	μπ/τ			τραμπάλα	μπ		
τραπεζιέρα	τ			τραχηλίτιδα	μπ		
τρέλα	μπ/τ			τρελαμάρα	μπ/τ		
τρελάρα	τ			τρελοπαντιέρα	μπ/τ		
τρεμεντίνα	μπ			τρεμούλα	τ		μπ
τρεφιλιέρα	τ			τρεχάλα	μπ/τ		
τριαντάρα	τ			τριάρα	μπ/τ		
τριγυρίστρα	τ			τρίλια	μπ/τ		
τρίπλα	τ			τριψάνα	τ		
τρόικα	μπ			τρομάρα	μπ/τ		
τρόμπα μαρίνα	τ			τροτέζα	μπ/τ		
τρούφα	μπ			τρυγήτρα	τ		
τρυπιοχέρα	τ			τρυφεράδα	μπ		
τρυφερότητα	μπ			τσαγίερα	τ		
τσαγκαροδευτέρα	τ		μπ	τσαγκίλα	τ		
τσάκα	τ			τσακίστρα	τ		
τσακμακόπετρα	μπ/τ			τσαλάκα	μπ		
τσαμπούνα	μπ			τσαννάκα, τσανάκα	μπ/τ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
τσαντίλα	τ			τσαούσα	τ		
τσαπερδόνα	μπ/τ			τσαρίνα	μπ		
τσάρκα	μπ/τ			τσατίλα, τσαντίλα	μπ/τ		
τσάτσα	τ			τσελιγκοπούλα	τ		
τσιγγανοπούλα	τ			τσικουδία	μπ		
τσίλια	μπ/τ			τσιμινιέρα	τ		
τσίμπλα	μπ			τσίπα	τ		μπ
τσιππούρα	μπ			τσιριμόνια	μπ/τ		
τσίρλα	τ			τσιτίσα	τ		
τσιτσιμπίρα, τζιτζιμπίρα	μπ			τσιφτισσα	τ		
τσιχλόφουσκα	μπ			τσοκαρία	τ		
τσομπανοπούλα	τ			τσόντα	μπ		
τσοπανοπούλα	τ			τσότρα	μπ/τ		
τσούλα	τ			τσούπρα, τσούπα	μπ/τ		
τσόχα	μπ			τυπικούρα	τ		
τύπισσα	μπ			τυράννια	τ		
τυριέρα	μπ/τ			τύφλα	τ		μπ
τυφλόμυγα	τ		μπ	υγεία	τ		
υπερεπάρκεια	τ		μπ	υπόγα	τ		
υποδηματοποιία	τ		μπ	φάβα	μπ/τ		
φαγάνα	μπ/τ			φαγιάντσα	μπ/τ		
φαγούρα	τ		μπ	φαγωμάρα	μπ/τ		
φάκα	μπ			φαλτσοστέκα	τ		
φαμίλια	τ			φάμπρικα	μπ/τ		
φανουρόπιτα	τ			φανφάρα, φαμφάρα	μπ		
φάπα	μπ			φάρα	μπ/τ		
φάρμα	μπ/τ			φαρμακίλα	τ		μπ
φαρμακόγλωσσα	μπ			φάσα	μπ		
φασίνα	τ		μπ	φατσούλα	μπ		
φάτσα	μπ			φελούκα	μπ		
φευγάλα	μπ/τ			φθήνια	τ		
φιγούρα	μπ			φιδότρυπα	μπ		
φιλιέρα	τ			φιλιπινέζα	μπ		

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
φιλοτιμία	μπ			φινέτσα	τ		μπ
φιοριτούρα	μπ/τ			φίρμα	μπ		
φλογέρα	μπ			φλοκάτα	μπ		
φλούδα, φλοίδα	μπ			φοβέρα	μπ/τ		
φόδρα	μπ			φόλα	μπ/τ		
φοντανιέρα	τ			φόρα	τ		μπ
φόρμα	μπ			φορμάικα	τ		μπ
φόρμουλα	μπ			φορτέτσα	μπ		
φουκαριάρα	τ			φούμα	τ		
φουμαδόρισσα	τ			φούξια	μπ		
φούρια	μπ/τ			φούρκα	μπ		
φουρτούνα	μπ			φούσκα	μπ		
φουσκάλα	μπ			φουσκωμάρα	τ		
φούστα	μπ			φουστανέλα	μπ		
φραγκόκοτα	μπ/τ			φράντζα	μπ		
φραντζόλα	μπ			φράξια	μπ		
φρενοπαθολογία	μπ			φρίζα	μπ		
φριτέζα	μπ/τ			φριτούρα	μπ		
φρονιμάδα	τ			φρουτιέρα	μπ/τ		
φρυγανιέρα	μπ/τ			φτήνια, φθήνια	μπ/τ		
φτώχεια	τ			φτώχια	μπ		
φτωχομάνα	τ			φουσαρμόνικα	μπ/τ		
φυσούνα	μπ/τ			φώκια	τ		
φωλίτσα	μπ			φωνάρα	μπ		
φωτοδότρα	τ			φωτοκόπια	μπ		
χαβάγια	μπ			χαβούζα	μπ		
χάβρα	μπ			χαζαμάρα	τ		
χαζοβιόλα	τ			χαζοκουβέντα	μπ/τ		
χαζομάρα	μπ/τ			χαιρετούρα	μπ/τ		
χαλάουα	τ			χαλάστρα	τ		
χαμαλίκα	μπ			χαμηλοβλεπούσα	μπ/τ		
χαμοκέλλα	μπ			χαμοπέρδικα	μπ/τ		
χαμούρα	τ			χαραμοφαίσσα	τ		
χαρτοσακούλα	μπ			χασούρα	τ		μπ

Continued

Table 46 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
χέστρα	τ			χηρεία	τ		
χιλιάρα	τ			χιλιοχρονίτισσα	τ		
χιονοθύελλα	τ			χλαπάτσα, κλαπάτσα	τ		μπ
χλεμπόνα	μπ			χοντρέλα	μπ/τ		
χορτόπιτα	τ			χορτόσουπα	τ		
χούντα	μπ/τ			χριστοπαναγία	τ		
χρυσόκολλα	μπ			χρυσόμυγα	μπ		
χρυσοχέρα	τ			χρωματοπυξίδα	μπ		
χωματίλα	τ		μπ	χωνεύτρα	μπ		
χωριατιά	μπ			χωριατοπούλα	τ		
ψάθα	τ			ψάλτρια	τ		
ψαρίλα	τ		μπ	ψαρόβαρκα	μπ/τ		
ψαροκασέλα	μπ/τ			ψαρόκολλα	μπ/τ		
ψαρομάλλα	τ			ψαροπούλα	μπ/τ		
ψαρόσουπα	τ			ψαρότρατα	μπ		
ψηλογκαμήλα	τ			ψηλομύτα	τ		
ψηστιέρα	τ		μπ	ψηφοθηρία	τ		μπ
ψιλοκουβέντα	τ			ψίχα	τ		
ψιχάλα	μπ/τ			ψιψίνα	τ		
ψυχάρα	τ			ψυχομάννα, ψυχομάννα	μπ/τ		
ψυχοπαίδα	τ			ψυχόπιτα	τ		
ψύχρα	τ		μπ	ψυχραιμία	τ		μπ
ψωμιέρα	μπ/τ			ψωμόλυσσα	τ		μπ
ψώρα	τ		μπ	ψωροκώσταινα	τ		μπ
ψωροπερηφάνια	τ						

A2. Feminine nouns with nominative singular –η and plural –ες

The nouns in this inflectional category have stress on the final syllable in the genitive plural, but may have stress on any of the final three syllables in the other forms.

Example paradigms:

η κόρη 'daughter'	SINGULAR	PLURAL		αντάμωση 'meeting'	SINGULAR	PLURAL
NOMINATIVE	κόρη	κόρες		NOMINATIVE	αντάμωση	αντάμωσες
ACCUSATIVE	κόρη	κόρες		ACCUSATIVE	αντάμωση	αντάμωσες
GENITIVE	κόρης	κορών		GENITIVE	αντάμωσης	ανταμωσών
VOCATIVE	κόρη	κόρες		VOCATIVE	αντάμωση	αντάμωσες

Table 47: Examples of Modern Greek feminine nouns with nominative singular –η and plural –ες

Quick stats:

- Babiniotis and Triantafillidis combined: 192 nouns with genitive plural gaps
- Only Triantafillidis:
 - 169 genitive plural gaps (10.8% of all genitive plural gaps)
 - 1,455 nouns in this inflection class (5.3% of all nouns)
 -

Nouns with genitive plural gaps:

Word	Gpl	G	Pl	Word	Gpl	G	Pl
αβροφροσύνη	μπ/τ			αγάπη	μπ/τ		
αγαρμποσύνη	τ			αγιοσύνη	τ		
αγκάλη	μπ/τ			αγνωμοσύνη	τ		μπ
αγράμπελη	τ		μπ	αγριοβρόμη	τ		

Continued

Table 48: Genitive plural gaps among feminine nouns with nominative singular –η and plural –ες

Table 48 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
αγριόβρομη	τ			αετοράχη	τ		
αἰτοράχη	τ			άλμη	τ		
αμασκάλη, αμασχάλη	τ			αμάχη	μπ/τ		
άμπωτη	τ		μπ	αμυαλοσύνη	τ		
αναθύμηση	τ			αναξιοσύνη	τ		
ανάπαυση	τ			ανέμη	μπ		
ανεμοζάλη	τ		μπ	ανεμώνη	μπ/τ		
αντιλόπη	τ			αντίχριστη	τ		
αντρειοσύνη	τ			απαλοσύνη	τ		
απελεύθερη	τ			απεραντοσύνη	τ		μπ
άρμη, άλμη	τ		μπ	ασημόσκη	τ		μπ
ασχετοσύνη	τ			ασχημοσύνη	τ		
ατζαμοσύνη	τ			ατόλη	μπ		
ατσαλοσύνη	τ			άχνη	τ		μπ
βασιλοκόρη	μπ			βενεδικτίνη	μπ		
βιασύνη	τ			βοή, βουή)	τ		μπ
βουή	τ			βρύση	τ		
γαλήνη	τ		μπ	γενναιοφροσύνη	τ		
γεροντοκόρη	μπ			γεροπαράξενη	τ		
γιαούρτη	τ			γλυκόζη	τ		μπ
δεξιοσύνη	τ			διαμαντόσκη	μπ		
διαμαρτυρόμενη	τ			διαμάχη	τ		
διανοούμενη	τ			δουλοφροσύνη	τ		
δραμαμίνη	τ			εγκυμοσύνη	τ		μπ
ειδή	τ		μπ	ελεημοσύνη	μπ/τ		
ελευθεροφροσύνη	τ			εμπορευάμενη	τ		
εξαδέλφη, εξαδέρφη	τ			ερυθρόδερμη	τ		
ευγνωμοσύνη	τ		μπ	ζάλη	τ		
ζάχαρη	μπ/τ			ζαχαρίνη	τ		
ζέστη	μπ/τ			ζυμάση	τ		
ζωγραφική	τ			ήβη	τ		μπ
θρεψίνη	τ			θύμηση	τ		
ιερόδουλη	τ			ιεροσύνη	τ		μπ
κάδη	τ			κακοσύνη	τ		

Continued

Table 48 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
καλλιόπη	τ			καλοσύνη	μπ/τ		
κάμαρη	τ			καπατσοσύνη	τ		
κάππαρη	μπ/τ			καρβουνόσκονη	τ		
κατηχούμενη	τ			κήλη	τ		μπ
κουφόβραση	μπ/τ			κράμβη	μπ		
κρεβατοκάμαρη	τ			κρέμαση	τ		
κωλότσεπη	μπ/τ			λαδορίγανη	τ	μπ	μπ
λαΐδη	τ			λακτάση	τ		
λύπη	μπ			μαμμή	μπ		
μάμμη	μπ			μαργαρίνη	μπ/τ		
μαρμαρόσκονη	τ			μασχάλη	τ		
μαύρη	τ			μαυροδάφνη	μπ/τ		
μεγαλοπραγμοσύνη	τ			μεγαλορρημοσύνη	τ		
μεγαλοσύνη	τ		μπ	Μεγαλόχαρη	τ		
μέγγενη	τ			μειξοπάρθενη	τ		
μελλοθάνατη	τ			μέση	μπ/τ		
μετριοφροσύνη	μπ/τ			μιλέδη	τ		μπ
μνήμη	μπ/τ			μοναχοκόρη	μπ/τ		
μούρη	μπ/τ			μπέμπελη	μπ		τ
μπουνταλοσύνη	τ			μπριγιαντίνη	μπ/τ		
μύλη	τ			μύτη	τ		
μωαμεθανή	τ			νιόνυφη	μπ/τ		
νιότη	τ		μπ	νοικοκυροσύνη	τ		μπ
ντραμαμίνη	τ			νύφη	τ		
ξαδέλφη, ξαδέρφη	τ			ξερόβρυση	μπ		
οδαλίσκη	τ			οδοντιατρική	τ		
οδοντίνη	τ			οφθαλμαπάτη	τ		
παιδίσκη	μπ/τ			πάλη	τ		μπ
πανώλη	τ			παππαδοκόρη, παπαδοκόρη	μπ		
παράνυφη	τ			παρατρεχάμενη	τ		
πέραση	τ			πεύκη	τ		
πεψίνη	τ			πικροδάφνη	μπ		
πλώρη	μπ			πορσελάνη	μπ		

Continued

Table 48 continued

Word	Gpl	G	Pl	Word	Gpl	G	Pl
προμάμμη	τ		μπ	προσμονή	τ		
προσοχή	τ		μπ	πρωτοξαδέρφη	τ		
ρητινόλασπη	μπ			ρίγανη	μπ/τ		
σακχαρίνη	τ			σκανδάλη	τ		
σκάφη	τ			σκόλη, σχόλη	μπ/τ		
σκόνη	μπ/τ			σκορδόπιστη	τ		
σφυριδόσκονη	μπ		τ	σουλφαμιδόσκονη	τ		
στάνη	τ		μπ	στάφνη	τ		
στάχτη	μπ			στέγη	τ		
στεφάνη	μπ			συγγνώμη	τ		
συγγνώμη	τ			σύφιλη	τ		μπ
συχώρεση	τ			σχόλη	τ		
ταπεινοσύνη	τ			ταπεινοφροσύνη	τ		μπ
τεστοστερόνη	μπ			Τετάρτη	τ		
τόλμη	τ		μπ	Τρίτη	τ		
Τσικνοπέμπτη	μπ/τ			υπακοή	τ		μπ
φαρμακευτική	τ			φαρμακόγλωσση	τ		
φέξη	τ		μπ	φέρμελη	μπ/τ		
φίλη	μπ			φλοκάτη	μπ		
φορμόλη	τ		μπ	φρουκτόζη	τ		μπ
φτέρη	μπ			φυγόδικη	τ		
φυγόποινη	τ			χάρη	μπ/τ		
χάση	τ		μπ	χειροπέδη	τ		
χηρευάμενη	τ			χόβολη	τ		μπ
χρυσόσκονη	τ		μπ	ψυχοκόρη	μπ/τ		

A3. Masculine nouns with nominative singular –ας and plural –ες

Nouns in this inflection class represent two stress patterns in the genitive plural. Some have stress on the penultimate, while for other nouns the genitive plural has stress on the final syllable, regardless of stress in the other word forms.

Example paradigms:

ο φύλακας	SINGULAR	PLURAL
NOMINATIVE	φύλακας	φύλακες
ACCUSATIVE	φύλακα	φύλακες
GENITIVE	φύλακα	φυλάκων
VOCATIVE	φύλακα	φύλακες

ο αγκώνας	SINGULAR	PLURAL
NOMINATIVE	αγκώνας	αγκώνες
ACCUSATIVE	αγκώνα	αγκώνες
GENITIVE	αγκώνα	αγκώνων
VOCATIVE	αγκώνα	αγκώνες

ο τουρίστας	SINGULAR	PLURAL
NOMINATIVE	τουρίστας	τουρίστες
ACCUSATIVE	τουρίστα	τουρίστες
GENITIVE	τουρίστα	τουριστών
VOCATIVE	τουρίστα	τουρίστες

ο άντρας	SINGULAR	PLURAL
NOMINATIVE	άντρας	άντρες
ACCUSATIVE	άντρα	άντρες
GENITIVE	άντρα	αντρών
VOCATIVE	άντρα	άντρες

Table 49: Examples of Modern Greek masculine nouns with nominative singular –ας and plural –ες

Quick stats:

- Babiniotis and Triantafillidis combined: 57 genitive plural gaps
- Only Triantafillidis:
 - No genitive plural gaps in this inflection class (0% of all gaps)
 - 831 nouns in this inflection class (3.0% of all nouns)

Nouns with genitive plural gaps:

Word	Gpl	G	Pl	Word	Gpl	G	Pl
αλητάμπουρας	μπ			αμπλαούμπλας	μπ		
άντρακλας	μπ			αρτίστας	μπ		
γεροντόμαγκας	μπ			γεροζούρας	μπ		
γκαβούλιακας	μπ			γρίβας	μπ		
δημοσιοσχετίστας	μπ			δόκτορας	μπ		
ζήτουλας	μπ			ζουρλομανδύας	μπ		
θεσιθήρας	μπ			κάβουρας	μπ		
καζανόβας	μπ			κανάγιας	μπ		
κάπελας	μπ			κοντραμπασίστας	μπ		
μαγαζάτορας	μπ			μάγκας	μπ		
μαικήνας	μπ			μαλάκας	μπ		
μάμπας	μπ			μαριονετίστας	μπ		
μπάκακας	μπ			μπαμπούλας	μπ		
μπόμπιρας	μπ			μπουμπούνας	μπ		
μπούσουλας	μπ			ξερόβηχας	μπ		
ξερόλας	μπ			ξευτίλας	μπ		
ομορφάντρας	μπ			οργανίστας	μπ		
παπάρας	μπ			παπαρδέλας	μπ		
πάφιλας	μπ			πεινάλας	μπ		
πόντικας	μπ			πρόποδες	μπ		
ραλίστας	μπ			ρούφουλας	μπ		
σκούληκας	μπ			σπεσιαλίστας	μπ		
σπόνσορας	μπ			τερορίστας	μπ		
τζαζίστας	μπ			τζιτζικας	μπ		
τζιτζιρας	μπ			τρελάρας	μπ		
τυφλοπόντικας	μπ			φαταούλας	μπ		
φίστουλας	μπ			φλαουτίστας	μπ		
χρυσογέρακας	μπ			ψείρας	μπ		
ψηλολέλεκας	μπ						

Table 50: Genitive plural gaps among masculine nouns with nominative singular –ας and plural –ες

A4. Neuter nouns with nominative singular –ι

The nouns in this inflection class have one more syllable in the plural and the genitive singular than in the nominative and accusative singular. Stress placement in the genitive plural is always on the final syllable, but stress in the rest of the plural forms and the genitive singular falls according to two patterns. If stress is on the final syllable in the nominative singular, it is on the final syllable throughout the paradigm, as in *παιδί*. If stress is on the penultimate syllable in the nominative singular, stress shifts to the final syllable in the genitive singular and genitive plural, but is otherwise columnar, as in *αγόρι*. According to Holton et. al (1997:65) there is only one noun of this type with stress on the antepenultimate – *φύλντισι* ‘ivory’.

Example paradigms:

το παιδί	SINGULAR	PLURAL
NOMINATIVE	παιδί	παιδιά
ACCUSATIVE	παιδί	παιδιά
GENITIVE	παιδιού	παιδιών
VOCATIVE	παιδί	παιδιά

το αγόρι	SINGULAR	PLURAL
NOMINATIVE	αγόρι	αγόρια
ACCUSATIVE	αγόρι	αγόρια
GENITIVE	αγοριού	αγοριών
VOCATIVE	αγόρι	αγόρια

Table 51: Examples of Modern Greek neuter nouns with nominative singular –ι

Quick stats:

- Babiniotis and Triantafyllidis combined: 15 genitive plural gaps
- Only Triantafyllidis:
 - No genitive plural gaps (0% of all genitive plural gaps)
 - 1,794 nouns in this inflection class (6.6% of all nouns)

Nouns with genitive plural gaps:

Word	Gpl	G	Pl	Word	Gpl	G	Pl
γουλί	μπ			καζίκι	μπ		
κρασοπότι	μπ			λιονταρίνα	μπ		
ματζούνι	μπ			μέλι	μπ		
μετάξι	μπ			νέφτι	μπ		
νοίκι	μπ			σέσελι	μπ		
σπόρι	μπ			τούλι	μπ		
χαμαλίκι	μπ						

Table 52: Genitive plural gaps among neuter nouns with nominative singular –ι

A5. Neuter nouns with nominative singular –ος

In this inflection class, all nouns have stress on the final syllable in the genitive plural.

Nouns with stress on the penultimate in the nominative singular and most other cases have stress on the final syllable only in the genitive plural (το κράτος). Those nouns with stress on the antepenultimate syllable in the nominative singular have stress on the penultimate syllable in the genitive singular, and throughout the plural cases (το πέλαγος).

Example paradigms:

το κράτος 'state'	SINGULAR	PLURAL	το πέλαγος 'sea'	SINGULAR	PLURAL
NOMINATIVE	κράτος	κράτη	NOMINATIVE	πέλαγος	πελάγη
ACCUSATIVE	κράτος	κράτη	ACCUSATIVE	πέλαγος	πελάγη
GENITIVE	κράτους	κρατών	GENITIVE	πελάγους	πελαγών
VOCATIVE	κράτος	κράτη	VOCATIVE	πέλαγος	πελάγη

Table 53: Examples of Modern Greek neuter nouns with nominative singular –ος

Quick stats:

- Babiniotis and Triantafillidis combined: 12 nouns with genitive plural gaps
- Only Triantafillidis:
 - 11 genitive plural gaps in this inflection class (0.7% of all gaps)
 - 120 nouns in this inflection class (0.4% of all nouns)
 -

Nouns with genitive plural gaps:

Word	Gpl	G	Pl	Word	Gpl	G	Pl
άγος	τ			άγχος	τ		
άλσος	τ			βένθος	τ		
έλεος	μπ			θάμπος	τ		
θάρρος	τ		μπ	κάλλος	μπ/τ		
κόστος	τ		μπ	μάκρος	τ		μπ
μίσος	μπ/τ			σκότος	τ	μπ	

Table 54: Genitive plural gaps among neuter nouns with nominative singular –ος

A6. Masculine nouns with nominative singular –ης and plural –ες

Masculine nouns with the nominative singular marker –ης fall into two inflection classes. One class has the nominative plural marker –ηδες. The other has nominative plural form –ες. Only the latter have paradigmatic gaps and in this class, stress in the genitive plural is always on the final syllable, regardless of stress placement in the rest of the paradigm.

Example paradigms:

ο κλέφτης ‘thief’	SINGULAR	PLURAL	ο καθηγητής ‘professor’	SINGULAR	PLURAL
NOMINATIVE	κλέφτης	κλέφτες	NOMINATIVE	καθηγητής	καθηγητές
ACCUSATIVE	κλέφτη	κλέφτες	ACCUSATIVE	καθηγητή	καθηγητές
GENITIVE	κλέφτη	κλεφτών	GENITIVE	καθηγητή	καθηγητών
VOCATIVE	κλέφτη	κλέφτες	VOCATIVE	καθηγητή	καθηγητές

Table 55: Examples of Modern Greek masculine nouns with nominative singular –ης with the nominative plural –ες

Quick stats:

- Babinotis and Triantafillidis combined: 12 nouns with genitive plural gaps
- Triantafillidis:
 - No nouns with genitive plural gaps (0% of all genitive plural gaps)
 - 1,468 nouns in this inflection class (5.4% of all nouns)

Nouns with genitive plural gaps:

Word	Gpl	G	Pl	Word	Gpl	G	Pl
αντεροβγάλτης	μπ			ασβέστης	μπ		
γνώστης	μπ			καντηλανάφτης	μπ		
λεβέντης	μπ			μαγκίτης	μπ		
πολυτεχνίτης	μπ			πορφυρίτης	μπ		
σκυλοπνίχτης	μπ			τυφλοσούρτης	μπ		
φαμπρικήντης	μπ			γαϊτανοφρύδης	μπ		

Table 56: Genitive plural gaps among masculine nouns with nominative singular –ης and plural –ες

A7. Neuter nouns with nominative singular –ο

Nouns in this inflection class present three genitive plural stress patterns. If the other cases have stress on the final or penultimate syllable, the genitive plural will also have stress on that same syllable, i.e. stress is columnar. However, if stress is on the antepenultimate in the nominative plural, the inflection class presents two stress patterns. Either stress will be columnar, including antepenultimate stress in the genitive plural (το δάχτυλο), or stress will shift to the penultimate syllable in the genitive singular and plural (το πρόσωπο).

Example paradigms:

το πρόσωπο 'face'	SINGULAR	PLURAL	το δάχτυλο 'finger'	SINGULAR	PLURAL
NOMINATIVE	πρόσωπο	πρόσωπα	NOMINATIVE	δάχτυλο	δάχτυλα
ACCUSATIVE	πρόσωπο	πρόσωπα	ACCUSATIVE	δάχτυλο	δάχτυλα
GENITIVE	προσώπου	προσώπων	GENITIVE	δάχτυλου	δάχτυλων
VOCATIVE	πρόσωπο	πρόσωπα	VOCATIVE	δάχτυλο	δάχτυλα

το βιβλίο 'book'	SINGULAR	PLURAL	το βουνό 'mountain'	SINGULAR	PLURAL
NOMINATIVE	βιβλίο	βιβλία	NOMINATIVE	βουνό	βουνά
ACCUSATIVE	βιβλίο	βιβλία	ACCUSATIVE	βουνό	βουνά
GENITIVE	βιβλίου	βιβλίων	GENITIVE	βουνού	βουνών
VOCATIVE	βιβλίο	βιβλία	VOCATIVE	βουνό	βουνά

Table 57: Examples of Modern Greek neuter nouns with nominative singular –ο

Quick stats:

- Babiniotis and Triantafillidis combined: 9 nouns with genitive plural gaps
- Only Triantafillidis:
 - No nouns with genitive plural gaps (0% of all genitive plural gaps)
 - 3,340 nouns in this inflection class (12.2% of all nouns)

Nouns with genitive plural gaps:

Word	Gpl	G	Pl	Word	Gpl	G	Pl
γύναιο	μπ			ζούζουλο	μπ		
κοτόπουλο	μπ			μάγουλο	μπ		
μεσούρανα	μπ			νυχτοκάματο	μπ		
παλιόφαγο	μπ			πράτα	μπ		
τσούρμο	μπ						

Table 58: Genitive plural gaps among neuter nouns with nominative singular –ο

A8. Masculine nouns with nominative singular –ας and nominative plural –αδες

Nouns in this inflection class have a simpler stress pattern than most of those discussed above. When the nominative singular has stress on the final syllable or penultimate syllable, stress is columnar throughout the paradigm, including in the genitive plural. In the few cases in which the nominative singular has stress on the antepenultimate syllable, stress shifts one syllable towards the end of the word in the entire plural, including the genitive plural.¹⁰⁴ This last pattern is explained by the fact that stress in Modern Greek can be no more than three syllable from the end of the word. Since the plural forms have one more syllable than those in the singular, stress shifts one syllable.

Example paradigms:

ο παπάς 'priest'	SINGULAR	PLURAL	ο τσέλιγκας 'shepherd'	SINGULAR	PLURAL
NOMINATIVE	παπάς	παπάδες	NOMINATIVE	τσέλιγκας	τσελίγκαδες
ACCUSATIVE	παπά	παπάδες	ACCUSATIVE	τσέλιγκα	τσελίγκαδες
GENITIVE	παπά	παπάδων	GENITIVE	τσέλιγκα	τσελίγκαδων
VOCATIVE	παπά	παπάδες	VOCATIVE	τσέλιγκα	τσελίγκαδες

Table 59: Examples of Modern Greek masculine nouns with nominative singular –ας and nominative plural –αδες

¹⁰⁴ The *Lexiko tis koinis neoellinikis* {, 1998 #767} marks only nine nouns of this inflection class with antepenultimate stress, five of which are compounds with –παπας.

Quick stats:

- Babiniotis and Triantafyllidis combined: 2 nouns with genitive plural gaps
- Only Triantafyllidis:
 - No nouns with genitive plural gaps (0% of all genitive plural gaps)
 - 307 nouns in this inflection class (1.1% of all nouns)
 -

Nouns with genitive plural gaps:

Word	Gpl	G	Pl
βαρέλας	μπ		
γκιουλέκας	μπ		

Table 60: Genitive plural gaps among imparisyllabic masculine nouns with nominative singular –ας and nominative plural –αδες

A9. Neuter nouns with nominative singular –μα

Holton et al. (1997:66) describe neuter nouns with nominative singular –μα in the following way: “These nouns may be of two syllables, like κύμα ‘wave’ (with paroxytone stress), or of three or more syllables, like πρόβλημα ‘problem’ (with proparoxytone stress). The endings of the genitive singular and all plural cases involve an additional syllable, which has implications for the position of the stress. The genitive singular and the nominative and accusative plural of these nouns are always stressed on the antepenultimate; the genitive plural always has the stress on the penultimate.”

Example paradigms:

το κύμα 'wave'	SINGULAR	PLURAL	το πρόβλημα 'problem'	SINGULAR	PLURAL
NOMINATIVE	κύμα	κύματα	NOMINATIVE	πρόβλημα	προβλήματα
ACCUSATIVE	κύμα	κύματα	ACCUSATIVE	πρόβλημα	προβλήματα
GENITIVE	κύματος	κυμάτων	GENITIVE	προβλήματος	προβλημάτων
VOCATIVE	κύμα	κύματα	VOCATIVE	πρόβλημα	προβλήματα

Table 61: Examples of Modern Greek neuter nouns with nominative singular –μα

Quick stats:

- Babiniotis and Triantafillidis combined: 2 nouns with genitive plural gaps
- Only Triantafillidis:
 - No nouns with genitive plural gaps in this inflection class (0% of all gaps)
 - 2,380 nouns in this inflection class (8.7% of all nouns)

Nouns with genitive plural gaps:

Word	Gpl	G	Pl
μάλαμα	μπ		
σιγανογιχάλισμα	μπ		

Table 62: Genitive plural gaps among neuter nouns with nominative singular –μα

APPENDIX B

SURVEY INSTRUMENT: GREEK PERIPHRAISIS

Αυτό το ερωτηματολόγιο έχει τρία μέρη. Στο πρώτο, θα σας ρωτήσουμε να δώσετε λίγες πληροφορίες γύρω από τον εαυτό σας και τη γλωσσική σας γνώση. Στο δεύτερο, θα σας ρωτήσουμε να συμπληρώσετε μερικές προτάσεις που έχουν κενά. Τέλος, στο τρίτο μέρος, θα σας ρωτήσω να ξαναγράψετε μερικές προτάσεις για να ακουστούν πιο φυσικές στα ελληνικά.

Πρώτο Μέρος: Προσωπικές Πληροφορίες

ΟΔΗΓΙΕΣ: Όλοι οι άνθρωποι δε μιλούν με τον ίδιο τρόπο. Δεδομένου ότι η ηλικία, το φύλο και ο τόπος καταγωγής είναι ορισμένοι από τους πολλούς παράγοντες που επηρεάζουν τον τρόπο ομιλίας, θα θέλαμε να ξέρουμε λίγα πράγματα σχετικά με σας. Αυτές οι πληροφορίες θα μας βοηθήσουν να συγκρίνουμε τις απαντήσεις σας στο ερωτηματολόγιο με αυτές άλλων συμμετεχόντων στην έρευνα. Όλες οι απαντήσεις θα παραμείνουν απόρρητες.

A1. Ποιο είναι το φύλο σας; ☐ άντρας ☐ γυναίκα

A2. Ποια είναι η ηλικία σας; _____ χρονών

A3. Ποιος είναι ο τόπος γεννήσεώς σας (πόλη, χώρα); _____

A4. Ποιος είναι ο τόπος γεννήσεως του πατέρα σας (πόλη, χώρα); _____

A5. Ποιος είναι ο τόπος γεννήσεως της μητέρας σας (πόλη, χώρα); _____

A6. Καταγράψτε όλα τα μέρη στα οποία έχετε διαμείνει για τουλάχιστον ένα χρόνο και πόσο χρονών είσασταν όταν μείνατε εκεί.

	το μέρος;	πόσο χρονών
--	-----------	-------------

είσασταν;

Παράδειγμα: η Θεσσαλονίκη, η Ελλάδα

0-18 χρονών

A7. Ποιο είναι το επάγγελμά σας; _____

A8. Ποιο είναι/ήταν το επάγγελμα του πατέρα σας; _____

A9. Ποιο είναι/ήταν το επάγγελμα της μητέρας σας; _____

A10. Ποιο είναι το υψηλότερο επίπεδο μόρφωσης που έχετε;

☐ δεν πήγα σχολείο ή δεν τελείωσα το δημοτικό

☐ απόφοιτος δημοτικού

☐ απόφοιτος γυμνασίου

☐ φοίτησα στην τριτοβάθμια εκπαίδευση αλλά δεν πήρα (ακόμη) πτυχίο

☐ πτυχιούχος Πανεπιστημίου

☐ κάτοχος Μεταπτυχιακού τίτλου σπουδών (π.χ. κάτοχος Μάστερ, κάτοχος πτυχίου Ιατρικής, κάτοχος Διδακτορικού)

A11. Ποια/ες είναι η/οι μητρική/ές σας γλώσσα/ες;

☐ Ελληνικά

☐ άλλη γλώσσα: _____

A12. Γνωρίζετε άλλες γλώσσες;

☐ ναι

☐ όχι

A13. Ποιες άλλες γλώσσες γνωρίζετε, και σε τι επίπεδο (Παράδειγμα: Αγγλικά (με ευχέρεια) Γερμανικά (μόνο για απλή συνεννόηση) Ρωσικά (μόνο διάβασμα));

A14. Σε ποια/ες γλώσσα/ες μιλάτε συνήθως με τους γονείς σας;

☐ Ελληνικά

☐ άλλη γλώσσα: _____

A15. Σε ποια/ες γλώσσα/ες μιλάτε συνήθως με τους φίλους σας;

☐ Ελληνικά

☐ άλλη γλώσσα: _____

A16. Σε ποια/ες γλώσσα/ες μιλάτε συνήθως στο σχολείο/στη δουλειά;

☐ Ελληνικά

☐ άλλη γλώσσα: _____

Δεύτερο Μέρος: Συμπληρώστε τα Κενά

ΟΔΗΓΙΕΣ: Στο τμήμα που ακολουθεί θα σας δοθούν 54 ανολοκλήρωτες προτάσεις στα Ελληνικά. Ολοκληρώστε κάθε πρόταση με τον τρόπο που θεωρείτε πιο φυσικό. Να γράψετε, παρακαλώ, το γράμμα που αντιστοιχεί στην απάντησή σας στο κενό. Μπορείτε να διαλέξετε μόνο μία απάντηση.

παράδειγμα: Η κατασκευή A πήρε ένα χρόνο.

A. αυτών των δρόμων

B. από τους δρόμους

Γ. αυτών των δρομών

Δ. από τους δρομούς

- B1.** Νόμιζε πως τα ναρκωτικά ήτανε η λύση _____.
Α. στα προβλήματα του
Β. των προβλημάτων του
Γ. στα προβλήματά του
Δ. των προβλημάτων του
- B2.** _____ υπάρχουνε πολλές τροφικές διαταραχές.
Α. Μεταξύ των αναβατών
Β. Ανάμεσα στους αναβάτες
Γ. Ανάμεσα στους αναβατές
Δ. Μεταξύ των αναβάτων
- B3.** Ένας μεγάλος αριθμός _____ έσπασε κατά τη διάρκεια του σεισμού.
Α. από βαθρά
Β. βαθρών
Γ. βάθρων
Δ. από βάθρα
- B4.** Το πλήθος _____ κατέβαλλε τον κλόουν.
Α. από τα παιδιά
Β. από τα παιδία
Γ. των παιδιών
Δ. των παιδίων
- B5.** Οι καρτ ποστάλ είναι _____.
Α. πιο αργές από τα γράμματα
Β. βραδύτερες των γραμμάτων
Γ. πιο αργές από τα γραμμάτα
Δ. βραδύτερες των γράμματων
- B6.** _____ πήρε όλη τη μέρα.
Α. Η επιλογή των ελεκτόρων
Β. Η επιλογή των ελέκτορων
Γ. Το να επιλέξουμε τους ελεκτόρες
Δ. Το να επιλέξουμε τους ελέκτορες
- B7.** Τα περισσότερα _____ έσπασαν κατά τη διάρκεια του σεισμού.
Α. από τα βάθρα
Β. των βαθρών
Γ. των βάθρων
Δ. από τα βαθρά

- B8.** Οι αίθουσες του σχολείου είναι μικρότερες _____ του πανεπιστημίου.
Α. από τις αίθουσες
Β. των αιθουσών
Γ. από τις αιθουσές
Δ. των αίθουσων
- B9.** Στο όνειρό της, μια ομάδα _____ χόρευε γύρω της φωνάζοντας κατάρες.
Α. δαίμονων
Β. από δαιμόνες
Γ. δαιμόνων
Δ. από δαίμονες
- B10.** Ακόμα και _____ τα πορτοφόλια κλαπήκανε!
Α. των πελατών
Β. από τους πελάτες
Γ. από τους πελατές
Δ. των πελάτων
- B11.** Μεγάλος αριθμός _____ χαλάσανε αμέσως.
Α. των μηχανών
Β. από τις μηχανές
Γ. των μηχανών
Δ. από τις μηχανές
- B12.** Αυτό το συγκρότημα _____ οργανώνει ένα μουσικό φεστιβάλ κάθε χρόνο.
Α. αιθούσων
Β. από αιθούσες
Γ. αιθουσών
Δ. από αίθουσες
- B13.** Η λάθος τοποθέτηση _____ έκανε τη σκεπή να καταρρεύσει.
Α. από τους δοκούς
Β. από τους δόκους
Γ. μερικών δόκων
Δ. μερικών δοκών
- B14.** Τα στούντιο για τις πρόβες στο σχολείο είναι _____.
Α. οκειότερα των συναυλιακών αίθουσων
Β. πιο οκεία από τις συναυλιακές αίθουσες
Γ. οκειότερα των συναυλιακών αιθουσών
Δ. πιο οκεία από τις συναυλιακές αιθουσές

- B15.** Νομίζω ότι τα φουντούκια είναι πολύ καλύτερα _____.
Α. από τα καστίνα
Β. των κάστανων
Γ. από τα κάστανα
Δ. των καστώνων
- B16.** Είμαι μεγαλύτερος _____ μου.
Α. των αδερφών
Β. από τους αδέρφους
Γ. από τους αδερφούς
Δ. των αδέρφων
- B17.** Τα μελάνια _____ είναι φτηνά.
Α. από τις εφημερίδες
Β. των εφημεριδών
Γ. των εφημερίδων
Δ. από τις εφημεριδές
- B18.** Κατά τη γνώμη μου μπορούμε να μάθουμε πολλά περισσότερα για την ιστορία της Ευρώπης μέσω των φρουρίων των Βαλκανίων παρά μέσω _____.
Α. των ανακτόρων της Δυτικής Ευρώπης
Β. από τα ανακτόρα της Δυτικής Ευρώπης
Γ. των ανάκτορων της Δυτικής Ευρώπης
Δ. από τα ανάκτορα της Δυτικής Ευρώπης
- B19.** Διακοσμημένες θήκες _____ εκτίθενται στο μουσείο.
Α. ξιφών
Β. ξίφων
Γ. από ξίφη
Δ. από ξιφή
- B20.** Ένας μικρός αριθμός _____ υγείας δεν θεραπεύεται.
Α. από τις διαταραχές
Β. διαταραχών
Γ. διαταράχων
Δ. από τις διαταράχες
- B21.** Απολογήθηκε για τη ζημιά _____.
Α. στα αυτοκινήτα
Β. των αυτοκινήτων
Γ. στα αυτοκίνητα
Δ. των αυτοκίνητων

- B22.** Το μάρμαρο _____ ράγισε.
Α. από τα βάθρα
Β. των βάθρων
Γ. των βαθρών
Δ. από τα βαθρά
- B23.** Οι ώρες _____ θα ανακοινωθούν σήμερα.
Α. μαθημάτων
Β. από τα μαθημάτα
Γ. από τα μαθήματα
Δ. μαθήματων
- B24.** Μερικές _____ χαλάσανε αμέσως.
Α. από τις μηχανές
Β. από τις μηχανές
Γ. των μηχανών
Δ. των μηχανών
- B25.** Μερικοί _____ δουλεύουνε στη βιβλιοθήκη.
Α. από τους πανεπιστημιακούς φοιτητές
Β. από τους πανεπιστημιακούς φοιτήτες
Γ. των πανεπιστημιακών φοιτητών
Δ. των πανεπιστημιακών φοιτητών
- B26.** Οι περισσότεροι _____ στην πόλη ήταν ιεραπόστολοι.
Α. των διαμαρτυρομένων
Β. των διαμαρτυρόμενων
Γ. από τους διαμαρτυρόμενους
Δ. από τους διαμαρτυρομένους
- B27.** Μεγάλη μερίδα _____ ψήφισε το νόμο.
Α. των βουλευτών
Β. των βουλευτών
Γ. από τους βουλευτές
Δ. από τους βουλευτές
- B28.** Τα ποντίκια φάγανε _____.
Α. τα μισά κάστανα
Β. το ήμισυ των κασάνων
Γ. τα μισά καστάνα
Δ. το ήμισυ των κάστανων

- B29.** Τα υπόστεγα _____ καταρεύσανε μετά το σεισμό.
Α. των αεροπλάνων
Β. για τα αεροπλανά
Γ. των αεροπλανών
Δ. για τα αεροπλάνα
- B30.** Η επιτροπή _____ ψήφισε κατά του νομοσχεδίου.
Α. των εννέα γερουσιαστών
Β. των εννέα γερουσιάστων
Γ. από εννέα γερουσιάστες
Δ. από εννέα γερουσιαστές
- B31.** Αυτό το συγκρότημα _____ λέγεται ότι είναι στοιχειωμένο.
Α. νησιών
Β. από νησιά
Γ. από νησία
Δ. νησίων
- B32.** Ένα μεγάλο αριθμός _____ βρεθήκανε στη νότια Ελλάδα.
Α. από τα ξίφη
Β. των ξίφων
Γ. των ξιφών
Δ. από τα ξιφή
- B33.** Άκουσα ότι ο πρωθυπουργός θα δώσει ένα λόγο _____ από τους εργάτες σιδηροδρόμων.
Α. εναντίον των πρόσφατων απεργιών
Β. ενάντια στις πρόσφατες απεργίες
Γ. εναντίον των πρόσφατων απεργίων
Δ. ενάντια στις πρόσφατες απεργίες
- B34.** Αγωνίστηκε γενναία _____ του.
Α. εναντίον των εχθρών
Β. εναντία στους εχθρούς
Γ. εναντίον των έχθρων
Δ. εναντία στοθς έχθρους
- B35.** Η στίβα _____ έπεσε στο κεφάλι του.
Α. από βιβλία
Β. των βιβλίων
Γ. από βιβλία
Δ. των βιβλίων

- B36.** Μια τοπική ομάδα εθελοντών περιποιείται τους κήπους _____.
Α. και των δύο των ανάκτορων
Β. και των δύο των ανακτόρων
Γ. και από τα δύο ανάκτορα
Δ. και από τα δύο ανακτόρα
- B37.** Η λιγότερο δημοφιλής έκθεση στο μουσείο είναι η αίθουσα _____.
Α. ορύκτων
Β. ορυκτών
Γ. με τα ορύκτα
Δ. με τα ορυκτά
- B38.** Όλα τα κατάρτια _____ ταλαντεύονταν από τον άνεμο.
Α. των πλοίων
Β. απ'τα πλοία
Γ. των πλοιών
Δ. απ'τα πλοιιά
- B39.** Ο δικαστής απένειμε ακυρώσεις _____.
Α. και στους δύο γάμους
Β. και στους δύο γαμούς
Γ. και των δύο γάμων
Δ. και των δύο γαμών
- B40.** _____ του Κώστα δεν υπάρχει ούτε ένας εμφανίσιμος άντρας!
Α. Ανάμεσα στους απόγονους
Β. Μεταξύ των απόγονων
Γ. Ανάμεσα στους απογόνους
Δ. Μεταξύ των απογόνων
- B41.** Οι δημοσιογράφοι είναι πιο σεβαστοί _____.
Α. από τους αρθρογράφους
Β. των αρθρογράφων
Γ. από τους αρθρογραφούς
Δ. των αρθρογραφών
- B42.** Το χειμώνα, άνθρωποι στήνουνε φουφούδες _____ έξω απ'τους κινηματογράφους.
Α. για κάστανα
Β. κασάνων
Γ. κάστανων
Δ. για καστάνα

- B43.** Τα αρχικά ανταλλακτικά ήτανε καλύτερα _____.
Α. από τις υποκαταστάσεις τους
Β. από τις υποκαταστασεις τους
Γ. των υποκαταστάσεων τους
Δ. των υποκαταστάσεών τους
- B44.** Μερικοί _____ παραιτήθηκαν όταν δεν τους πλήρωσε το θέατρο.
Α. των σκηνογραφών
Β. των σκηνογράφων
Γ. από τους σκηνογράφους
Δ. από τους σκηνογραφούς
- B45.** Ακονίσανε τις κόψεις _____ τους πριν από τη μάχη.
Α. από τα ξίφη
Β. των ξίφων
Γ. των ξιφών
Δ. από τα ξιφή
- B46.** Όλος ο κόσμος διαμαρτύρεται _____.
Α. εναντίον των βρετανικών και αμερικανικών κυβέρνησεων
Β. εναντίον των βρετανικών και αμερικανικών κυβερνήσεων
Γ. εναντία στις βρετανικές και αμερικανικές κυβέρνησεις
Δ. εναντία στις βρετανικές και αμερικανικές κυβερνήσεις
- B47.** Η ευτυχία των εργαζομένων είναι πιο σημαντική _____.
Α. από τα κέρδη
Β. των κέρδων
Γ. των κερδών
Δ. από τα κερδή
- B48.** Η ένωση _____ οργάνωσε το φεστιβάλ.
Α. πλοιοκτητών
Β. από τους πλοιοκτητές
Γ. από τους πλοιοκτήτες
Δ. πλοιοκτητών
- B49.** Οι χούλιγκαν σπάσανε τα παρμπρίζ _____ όταν ο Παναθηναϊκός έχασε το ματς.
Α. από όλα τα αυτοκίνητα
Β. όλων των αυτοκινήτων
Γ. όλων των αυτοκίνητων
Δ. από όλα τα αυτοκινλήτα

- B50.** Είναι δύσκολο να γίνει μια καλή μετάφραση _____ του Ομήρου.
Α. των έπων
Β. στα επή
Γ. των επών
Δ. στα έπη
- B51.** Δημιουργήθηκε μία παρεξήγηση _____ που κρατούν τους ομήρους.
Α. μεταξύ των διαπραγματευτών και αυτών
Β. ανάμεσα στους διαπραγματεύτες και σ' αυτούς
Γ. ανάμεσα στους διαπραγματευτές και σ' αυτούς
Δ. μεταξύ των διαπραγματευτών και αυτών
- B52.** Δημιουργήθηκε μία παρεξήγηση _____.
Α. ανάμεσα στους πελατές και το μαγαζάτορα
Β. μεταξύ των πελάτων και του μαγαζάτορα
Γ. ανάμεσα στους πελάτες και το μαγαζάτορα
Δ. μεταξύ των πελατών και του μαγαζάτορα
- B53.** Η πλειοψηφία _____ κάνουνε κριτική στην κυβέρνηση.
Α. από τις ανεξάρτητες εφημερίδες
Β. από τις ανεξάρτητες εφημερίδες
Γ. των ανεξάρτητων εφημερίδων
Δ. των ανεξάρτητων εφημερίδων
- B54.** 100 ψήφοι _____ ήταν αλλοιωμένες.
Α. στις εκλόγες
Β. των εκλογών
Γ. των εκλόγων
Δ. στις εκλογές

Τρίτο Μέρος: Τι είναι καλύτερο:

ΟΔΗΓΙΕΣ: Όταν δουλεύατε στο προηγούμενο μέρος, μήπως νομίζατε ότι μερικάς προτάσεις δεν σας έδωσαν του τύπου που προτιμούσατε ή δεν ακούστηκαν πολύ «φυσικές» (όπως θα τις έλεγε ένας Ελληνόφωνος).

Να ρίξετε μια ματιά σε καθεμία πρόταση στο εκείνο μέρος, και να βαλετε ένα «X» στο κένο τετράγωνο (☐) , αντιστοιχώς με την αίσθησή σας που η απάντησή σας είναι ό πως θα εκθράσετε 'σεις την έννοια της προτάσεως («Ναι» σημαίνει ότι η πρόταση είναι «φυσική» και δεν πρέπει να αλλάξετε τίποτε. «Όχι» σημαίνει ότι δεν είναι φυσική). Αν η απάντησή σας είναι «όχι», παρακαλώ να ξανά γράψετε την ολόκληρη πρόταση στη γραμμή κάτω αν υπάρχει άλλος τρόπος να εκφραστεί αυτή η έννοια. Σας παρακαλώ να ΜΗ σβύσετε τις απαντήσεις σας στο προηγούμενο μέρος.

παράδειγμα 1: Η κατασκευή A πήρε ένα χρόνο.

- A. αυτών των δρόμων
- B. από τους δρόμους
- Γ. αυτών των δρομών
- Δ. από τους δρομούς

i. ☒ Ναι ☐ Όχι

Αν όχι, να ξανά γράψετε την πρόταση εδώ: _____

παράδειγμα 2: Η απώλεση A έγινε πριν τη σημερινή εποχή.

- A. με τα δικαιωμάτα
- B. ...
- Γ. ...
- Δ. ...

ii. ☐ Ναι ☒ Όχι

Αν όχι, να διορθώσετε την πρόταση εδώ: Η απώλεση αυτών των δικαιωμάτων έγινε πριν τη σημερινή εποχή.

Γ1. ☐ Ναι ☐ Όχι

Αν όχι, να διορθώσετε την πρόταση εδώ: _____

(This is repeated for each of the 54 examples)

Μπράβο σας! Τελειώσατε! Πολύ σας ευχαριστούμε.

APPENDIX C

SURVEY INSTRUMENT: GREEK GENITIVE PLURAL GAPS

Αυτό το ερωτηματολόγιο έχει τρία μέρη. Στο πρώτο, θα σας ρωτήσω να δώσετε λίγες πληροφορίες γύρω από τον εαυτό σας και τη γλωσσική σας γνώση. Στο δεύτερο, θα σας ρωτήσω να υπολογίσετε μερικές λέξεις ελληνικές κατά την οικειότητα που έχετε για την καθεμιά. Τέλος, στο τρίτο μέρος, θα σας ρωτήσω να γράψετε λέξεις σε διαφορετικού τύπου και μετά να υπολογίσετε αυτές τις λέξεις ανάλογα με το αν σας φαίνονται γνήσιες λέξεις από τα νέα ελληνικά.

Πρώτο Μέρος: Προσωπικές Πληροφορίες

ΟΔΗΓΙΕΣ: Όλοι οι άνθρωποι δε μιλούν με τον ίδιο τρόπο. Δεδομένου ότι η ηλικία, το φύλο και ο τόπος καταγωγής είναι ορισμένοι από τους πολλούς παράγοντες που επηρεάζουν τον τρόπο ομιλίας, θα θέλαμε να ξέρουμε λίγα πράγματα σχετικά με σας. Αυτές οι πληροφορίες θα μας βοηθήσουν να συγκρίνουμε τις απαντήσεις σας στο ερωτηματολόγιο με αυτές άλλων συμμετεχόντων στην έρευνα. Όλες οι απαντήσεις θα παραμείνουν απόρρητες.

A1. Ποιο είναι το φύλο σας; ☐ άντρας ☐ γυναίκα

A2. Ποια είναι η ηλικία σας; _____ χρονών

A3. Ποιος είναι ο τόπος γεννήσεώς σας (πόλη, χώρα); _____

A4. Ποιος είναι ο τόπος γεννήσεως του πατέρα σας (πόλη, χώρα); _____

A5. Ποιος είναι ο τόπος γεννήσεως της μητέρας σας (πόλη, χώρα); _____

A6. Καταγράψτε όλα τα μέρη στα οποία έχετε διαμείνει για τουλάχιστον ένα χρόνο και πόσο χρονών είσασταν όταν μείνατε εκεί.

	το μέρος;	πόσο χρονών
--	-----------	-------------

είσασταν;		
-----------	--	--

Παράδειγμα:	η Θεσσαλονίκη, η Ελλάδα	0-18 χρονών
-------------	-------------------------	-------------

_____	_____
-------	-------

_____	_____
-------	-------

_____	_____
-------	-------

_____	_____
-------	-------

A7. Ποιο είναι το επάγγελμά σας; _____

A8. Ποιο είναι/ήταν το επάγγελμα του πατέρα σας; _____

A9. Ποιο είναι/ήταν το επάγγελμα της μητέρας σας; _____

A10. Ποιο είναι το υψηλότερο επίπεδο μόρφωσης που έχετε;

☐ δεν πήγα σχολείο ή δεν τελείωσα το δημοτικό

☐ απόφοιτος δημοτικού

☐ απόφοιτος γυμνασίου

- ☐ φοίτησα στην τριτοβάθμια εκπαίδευση αλλά δεν πήρα (ακόμη) πτυχίο
☐ πτυχιούχος Πανεπιστημίου
☐ κάτοχος Μεταπτυχιακού τίτλου σπουδών (π.χ. κάτοχος Μάστερ, κάτοχος πτυχίου Ιατρικής, κάτοχος Διδακτορικού)

A11. Ποια/ες είναι η/οι μητρική/ές σας γλώσσα/ες;

- ☐ Ελληνικά
☐ άλλη γλώσσα: _____

A12. Γνωρίζετε άλλες γλώσσες;

- ☐ ναι
☐ όχι

A13. Ποιες άλλες γλώσσες γνωρίζετε, και σε τι επίπεδο (Παράδειγμα: Αγγλικά (με ευχέρεια) Γερμανικά (μόνο για απλή συνεννόηση) Ρωσικά (μόνο διάβασμα));

A14. Σε ποια/ες γλώσσα/ες μιλάτε συνήθως με τους γονείς σας;

- ☐ Ελληνικά
☐ άλλη γλώσσα: _____

A15. Σε ποια/ες γλώσσα/ες μιλάτε συνήθως με τους φίλους σας;

- ☐ Ελληνικά
☐ άλλη γλώσσα: _____

A16. Σε ποια/ες γλώσσα/ες μιλάτε συνήθως στο σχολείο/στη δουλειά;

- ☐ Ελληνικά
☐ άλλη γλώσσα: _____

Δεύτερο Μέρος: Η Οικειότητα

ΟΔΗΓΙΕΣ: Παρακαλούμε να κρινετε κάθε λέξη κατά αυτή την κλίμακα. Να βάλετε στον κατάλληλον αριθμό.

- 1** Δεν ξέρω αυτή τη λέξη
- 2** Λίγο ξέρω την έννοια ή μπορώ να μαντέψω την έννοιά της
- 3** Ξέρω την έννοια αυτής της λέξης αλλά δεν την χρησιμοποιώ
- 4** Έχω χρησιμοποιήσει αυτή τη λέξη μια ή δύο φορές
- 5** Χρησιμοποιώ αυτή τη λέξη πότε-πότε
- 6** Χρησιμοποιώ αυτή τη λέξη πολύ

η λέξη	δεν την ξέρω	δεν την χρησιμοποιώ	την χρησιμοποιώ πότε-πότε			
η συστάδα	1	2	3	4	5	6
ο απόστολος	1	2	3	4	5	6
η γιαγιά	1	2	3	4	5	6
ο όφης	1	2	3	4	5	6
η λακκούβα	1	2	3	4	5	6
η μαμά	1	2	3	4	5	6
η σκλήθρα	1	2	3	4	5	6
η παγίδα	1	2	3	4	5	6
ο υπέρμαχος	1	2	3	4	5	6
ο λαθρέμπορος	1	2	3	4	5	6
ο κροκόδειλος	1	2	3	4	5	6
η καρότσα	1	2	3	4	5	6
η πιτζάμα	1	2	3	4	5	6
η μερίδα	1	2	3	4	5	6
η κροτίδα	1	2	3	4	5	6
το βιβάρι	1	2	3	4	5	6
ο επίσκοπος	1	2	3	4	5	6
η ροτόντα	1	2	3	4	5	6
ο υπήκοος	1	2	3	4	5	6
η αψίδα	1	2	3	4	5	6
ο πάσσαλος	1	2	3	4	5	6

η λέξη	δεν την ξέρω		δεν την χρησιμοποιώ		την χρησιμοποιώ πότε-πότε	
ο τσάμικος	1	2	3	4	5	6
η κοπέλα	1	2	3	4	5	6
ο κλίβανος	1	2	3	4	5	6
ο διθύραμβος	1	2	3	4	5	6
το πάρτι	1	2	3	4	5	6
ο παπουτσής	1	2	3	4	5	6
η αρβύλα	1	2	3	4	5	6
η χαράδρα	1	2	3	4	5	6
ηπραμάτεια	1	2	3	4	5	6
ο τραγέλαφος	1	2	3	4	5	6
ο μουσαμάς	1	2	3	4	5	6
η ασφαλτος	1	2	3	4	5	6
η τροχιά	1	2	3	4	5	6
η δίκη	1	2	3	4	5	6
η λαμπάδα	1	2	3	4	5	6
ο υπόνομος	1	2	3	4	5	6
ο καναπές	1	2	3	4	5	6
ο ρεπόρτερ	1	2	3	4	5	6
το πουλόβερ	1	2	3	4	5	6
η νουβέλα	1	2	3	4	5	6
η κοπάνα	1	2	3	4	5	6
η κολόνια	1	2	3	4	5	6
το δόρυ	1	2	3	4	5	6
η φυσούνα	1	2	3	4	5	6
το παιδί	1	2	3	4	5	6
ο δήμιος	1	2	3	4	5	6
η θυρίδα	1	2	3	4	5	6
η αρένα	1	2	3	4	5	6

η λέξη	δεν την ξέρω		δεν την χρησιμοποιώ		την χρησιμοποιώ πότε-πότε	
ο βαγενάς	1	2	3	4	5	6
το ταψί	1	2	3	4	5	6
το εκκρεμές	1	2	3	4	5	6
η καμπάνια	1	2	3	4	5	6
το ήπαρ	1	2	3	4	5	6
ο ταξιτζής	1	2	3	4	5	6
η σαμπάνια	1	2	3	4	5	6
ο διάκοσμος	1	2	3	4	5	6
η πλαζ	1	2	3	4	5	6
η μουρμούρα	1	2	3	4	5	6
η κομπίνα	1	2	3	4	5	6
ο κορβανάς	1	2	3	4	5	6
η κουλτούρα	1	2	3	4	5	6
το συμβάν	1	2	3	4	5	6
το ματς	1	2	3	4	5	6
ο κομμωτής	1	2	3	4	5	6
ο μόδιστρος	1	2	3	4	5	6
η καρέκλα	1	2	3	4	5	6
η ταβέρνα	1	2	3	4	5	6
η σακούλα	1	2	3	4	5	6
ο αμανές	1	2	3	4	5	6
ο χορευτής	1	2	3	4	5	6
ο τύραννος	1	2	3	4	5	6
ο σπόνδυλος	1	2	3	4	5	6
η αρκούδα	1	2	3	4	5	6
το μπουρί	1	2	3	4	5	6
ο βαρύτονος	1	2	3	4	5	6
ο καφετζής	1	2	3	4	5	6

- 9 Βλέπω τον _____.
(ο δήμιος) Κρίση: _____
- 10 Τραγουδώ για τον _____.
(ο χορευτής) Κρίση: _____
- 11 Οι μιναρέδες διαφόρων _____...
(η ροτόντα) Κρίση: _____
- 12 Μεταξύ του _____ και του διχτυού...
(το δόρυ) Κρίση: _____
- 13 Οι _____ είναι οι ίδιες με την αμφίεση
του Γερμανού. (η αρβύλα) Κρίση: _____
- 14 Το _____ βρίσκεται εκεί.
(το πάρτι) Κρίση: _____
- 15 Τα κορδόνια των _____...
(η πιτζάμα) Κρίση: _____
- 16 Το αγόρι είναι μεταξύ των _____...
(η καρέκλα) Κρίση: _____
- 17 Βλέπω τους _____.
(ο τσάμικος) Κρίση: _____
- 18 Το ρεφραίν του _____ είναι αργό.
(ο αμανές) Κρίση: _____
- 19 Ο _____ βρίσκεται εκεί.
(ο κροκόδειλος) Κρίση: _____
- 20 Το _____ είναι απαλό.
(το πουλόβερ) Κρίση: _____
- 21 Μεταξύ της _____ και του παππού
του... (η γιαγιά) Κρίση: _____
- 22 Οι _____ βρίσκονται εκεί.
(ο ρεπόρτερ) Κρίση: _____
- 23 Οι _____ θα έχουν μπλε χρώμα.
(η σακούλα) Κρίση: _____
- 24 Η χρήση των _____...
(η βελόνα) Κρίση: _____
- 25 Ο _____ βρίσκεται εκεί.
(ο όφης) Κρίση: _____
- 26 Τα _____ αρχίζουν.
(το ματς) Κρίση: _____

- 27 Η δημιουργία διαφόρων _____ Κρίση: _____
χωριών...
(η συστάδα)
- 28 Τα _____ είναι γαλάζιο. Κρίση: _____
(το πουλόβερ)
- 29 Βλέπω τους _____. Κρίση: _____
(ο υπέρμαχος)
- 30 Η _____ βρίσκεται εκεί. Κρίση: _____
(η χαράδρα)
- 31 Βλέπω τον _____. Κρίση: _____
(ο υπήκοος)
- 32 Η _____ ήταν οδυνηρή. Κρίση: _____
(η παγίδα)
- 33 Οι _____ αρχίζουν. Κρίση: _____
(η μουρμούρα)
- 34 Βλέπω τους _____. Κρίση: _____
(ο υπήκοος)
- 35 Ο _____ αρχίζει. Κρίση: _____
(ο τσάμικος)
- 36 Ο _____ στέκεται εκεί. Κρίση: _____
(ο απόστολος)
- 37 Τα ρεφραίν των _____ είναι αργά. Κρίση: _____
(ο αμανές)
- 38 Οι _____ ξεπορτίζουν εύκολα. Κρίση: _____
(η κοπέλα)
- 39 Βλέπω τον _____. Κρίση: _____
(ο επίσκοπος)
- 40 Η _____ είναι εκεί. Κρίση: _____
(η βελόνα)
- 41 Η πώληση των καλών _____... Κρίση: _____
(ηπραμάτεια)
- 42 Πρόκειται για τους _____. Κρίση: _____
(ο λαθρέμπορος)
- 43 Ο _____ είναι δυνατός. Κρίση: _____
(ο πάταγος)
- 44 Οι _____ βρίσκονται εκεί. Κρίση: _____
(η λαμπάδα)

- 45 Βλέπω τον _____.
(ο τραγέλαφος) Κρίση: _____
- 46 Με τον _____.
(ο μόδιστρος) Κρίση: _____
- 47 Η Ευρώπη βρίσκεται στην _____.
μεγάλων αποφάσεων. (η τροχιά) Κρίση: _____
- 48 Μία μετακίνηση των _____.
(η φυσούνα) Κρίση: _____
- 49 Το _____ στέκεται εκεί.
(το παιδί) Κρίση: _____
- 50 Η παρότρυνση των άλλων _____.
(ο καφετζής) Κρίση: _____
- 51 Η _____ υπάρχει.
(η κομπίνα) Κρίση: _____
- 52 Οι _____ του συγγραφέα διαβάζονταν
από λίγους... (η νουβέλα) Κρίση: _____
- 53 Το _____ είναι εδώ.
(το ήπαρ) Κρίση: _____
- 54 Παίρνω γράμματα από την _____ μου.
(η μαμά) Κρίση: _____
- 55 Το ξίφος είναι μεταξύ των _____.
(η αρβύλα) Κρίση: _____
- 56 Βλέπω τον _____.
(ο καφετζής) Κρίση: _____
- 57 Οι _____ στέκονται εκεί.
(η αρκούδα) Κρίση: _____
- 58 Η αρκούδα κοιμάται μεταξύ των
_____.
(η παγίδα) Κρίση: _____
- 59 Τα κλίματα των _____ στα
πανεπιστήμια... (η μουρμούρα) Κρίση: _____
- 60 Ο αποκλεισμός μεγάλων _____ της
κοινωνίας... (η μερίδα) Κρίση: _____
- 61 Βλέπω τους _____.
(ο διάκοσμος) Κρίση: _____

- 62 Ακούω τον _____.
(ο βαρύτονος) Κρίση: _____
- 63 Ο _____ στέκεται εκεί.
(ο ρεπόρτερ) Κρίση: _____
- 64 Εκτός από τους _____ υπάρχουν και οι
ιπποπόταμοι. (ο κροκόδειλος) Κρίση: _____
- 65 Στο _____.
(το ταψί) Κρίση: _____
- 66 Η _____ και τα άλλα οικοδομήματα...
(η ροτόντα) Κρίση: _____
- 67 Μεταξύ του _____ και του
μηχανισμού... (το εκκρεμές) Κρίση: _____
- 68 Οι _____ διαφέρουν.
(η κουλτούρα) Κρίση: _____
- 69 Μεταξύ των _____...
(ο παπουτσής) Κρίση: _____
- 70 Ακούω τους _____.
(ο διθύραμβος) Κρίση: _____
- 71 Η γυναίκα κεντά την επιδερμίδα των _____...
(ο μουσαμάς) Κρίση: _____
- 72 Βλέπω τους _____.
(ο δήμιος) Κρίση: _____
- 73 Ο _____ είναι εκεί.
(ο φοιτητής) Κρίση: _____
- 74 Μεταξύ των _____ στην Ευρώπη...
(η κουλτούρα) Κρίση: _____
- 75 Στους _____...
(ο υπόνομος) Κρίση: _____
- 76 Οι _____ στη χώρα μας είναι αταξικές!
(η κοπάνα) Κρίση: _____
- 77 Μεταξύ των _____...
(ο βαγενάς) Κρίση: _____
- 78 Στην _____...
(η ασφαλτος) Κρίση: _____

- 79 Οι _____ βρίσκονται εκεί.
(η φυσούνα) Κρίση: _____
- 80 Μεταξύ του _____ και της χορεύτριας...
(ο χορευτής) Κρίση: _____
- 81 Οι φωνές των _____ μας είναι δυνατές.
(η μαμά) Κρίση: _____
- 82 Το χυδαιότητα των άλλων _____ είναι
αηδιστικό. (η καμπάνια) Κρίση: _____
- 83 Βλέπω το _____.
(το μπουρί) Κρίση: _____
- 84 Μεταξύ της _____ και του καρδιού...
(η σκλήθρα) Κρίση: _____
- 85 Η ρύθμιση των κινητών _____...
(η θυρίδα) Κρίση: _____
- 86 Οι _____ βρίσκονται εκεί.
(η σαμπάνια) Κρίση: _____
- 87 Βλέπω τους _____.
(ο σπόνδυλος) Κρίση: _____
- 88 Το _____ άρχισε.
(το συμβάν) Κρίση: _____
- 89 Τα βλέμματα των _____ μας...
(η γιαγιά) Κρίση: _____
- 90 Βλέπω τους _____.
(ο απόστολος) Κρίση: _____
- 91 Η _____ είναι εκεί.
(η θυρίδα) Κρίση: _____
- 92 Μεταξύ του _____ και του πελάτη...
(ο ταξιτζής) Κρίση: _____
- 93 Οι προοπτικές των _____...
(η κοπάνια) Κρίση: _____
- 94 Η _____ δέντρων είναι εκεί.
(η συστάδα) Κρίση: _____
- 95 Το _____ κρίθηκε πολύ νωρίς από το
πρώτο μέρος. (το ματς) Κρίση: _____

- 96 Η _____ βρίσκεται εκεί.
(η πλαζ) Κρίση: _____
- 97 Κατά τους _____ της Αμερικής...
(ο επίσκοπος) Κρίση: _____
- 98 Μεταξύ των _____ αυτού του
συγγραφέα...
(η νουβέλα) Κρίση: _____
- 99 Για τους _____...
(ο τύραννος) Κρίση: _____
- 100 Η _____ φαίνεται μεγάλη.
(η μερίδα) Κρίση: _____
- 101 Τα μεγέθη των _____...
(η καρότσα) Κρίση: _____
- 102 Τα δόντια των _____...
(η αρκούδα) Κρίση: _____
- 103 Βλέπω τον _____.
(ο κομμωτής) Κρίση: _____
- 104 Μεταξύ του _____ και των δέντρων...
(το βιβάρι) Κρίση: _____
- 105 Οι _____ βρίσκονται εκεί.
(η κροτίδα) Κρίση: _____
- 106 Οι _____ μυρίζουν...
(η κολόνια) Κρίση: _____
- 107 Η διαχείριση των δημοσίων _____...
(ο κορβανάς) Κρίση: _____
- 108 Οι μυρουδιά των _____...
(η κολόνια) Κρίση: _____
- 109 Ο γιατρός βλέπει το _____.
(το παιδί) Κρίση: _____
- 110 Οι _____ φαίνονται μεγάλες.
(η λακκούβα) Κρίση: _____
- 111 Βλέπω την _____.
(η σκλήθρα) Κρίση: _____
- 112 Ο _____ υπάρχει.
(ο λαθρέμπορος) Κρίση: _____

- 113 Ποτήρια των διαφόρων _____... Κρίση: _____
(η σαμπάνια)
- 114 Ο _____ είναι εδώ. Κρίση: _____
(ο σπόνδυλος)
- 115 Το σπίτι βρίσκεται μεταξύ των _____. Κρίση: _____
(η χαράδρα)
- 116 Οι λεπτομέρειες για τη _____ Κρίση: _____
(η δίκη)
- 117 Βλέπω τον _____ Κρίση: _____
(ο φοιτητής)
- 118 Το _____ υπάρχει. Κρίση: _____
(το δόρυ)
- 119 Μεταξύ του _____ και του τραπεζιού... Κρίση: _____
(το ταψί)
- 120 Ένας από τους δύο _____... Κρίση: _____
(ο μόδιστρος)
- 121 Η _____ βρίσκεται εκεί. Κρίση: _____
(η καρέκλα)
- 122 Η διαφημιστική _____ για το Κρίση: _____
παπούτσια...
(η καμπάνια)
- 123 Τα _____ αρχίζουν. Κρίση: _____
(το πάρτι)
- 124 Τα μεγέθη των _____... Κρίση: _____
(η λακούβα)
- 125 Τα ψάρια στο _____... Κρίση: _____
(το βιβάρι)
- 126 Η _____ είναι εκεί. Κρίση: _____
(η πραγματία)
- 127 Βλέπω τον _____ Κρίση: _____
(ο παπουτσή)
- 128 Σε αντίθεση με τους κλασσικούς _____... Κρίση: _____
(ο κλίβανος)
- 129 Στον _____... Κρίση: _____
(ο κορβανάς)

- 130 Μεταξύ των _____ ... Κρίση: _____
(η κροτίδα)
- 131 Η _____ φαίνεται μεγάλη. Κρίση: _____
(η πιτζάμα)
- 132 Μεταξύ των _____ ... Κρίση: _____
(η ταβέρνα)
- 133 Μεταξύ του _____ και του τραπεζιού... Κρίση: _____
(ο μουσαμάς)
- 134 Η _____ βρίσκεται εκεί. Κρίση: _____
(η καρότσα)
- 135 Το τραπεζάκι είναι μεταξύ των _____ ... Κρίση: _____
(ο καναπές)
- 136 Ο _____ είναι εκεί. Κρίση: _____
(ο κομμωτής)
- 137 Η _____ είναι μεγάλη. Κρίση: _____
(η τροχιά)
- 138 Η _____ είναι σήμερα. Κρίση: _____
(η δίκη)
- 139 Ο πιανίστας πλαισιωνόταν με τρεις _____ Κρίση: _____
(ο βαρύτονος)
- 140 Ακούω τους _____ . Κρίση: _____
(ο πάταγος)
- 141 Μεταξύ των _____ ... Κρίση: _____
(η σακούλα)
- 142 Μεταξύ του _____ και του τραπεζιού... Κρίση: _____
(ο βαγενάς)
- 143 Οι άλλοι κτυπήσαμε τους _____ Κρίση: _____
βαθύτερα. (ο πάσσαλος)
- 144 Βλέπω τον _____ . Κρίση: _____
(ο τύραννος)
- 145 Οι _____ βρίσκονται εκεί. Κρίση: _____
(η ταβέρνα)
- 146 Η αγορά των _____ ... Κρίση: _____
(η λαμπάδα)

- 147 Θα κουβαλούσα τον _____ μόνος. Κρίση: _____
(ο καναπές)
- 148 Οι μορφές των _____... Κρίση: _____
(η αψίδα)
- 149 Τα ονόματα των _____... Κρίση: _____
(η κοπέλα)
- 150 Μεταξύ του _____ και της καρδιάς... Κρίση: _____
(το ήπαρ)
- 151 Μεταξύ των _____... Κρίση: _____
(η αρένα)
- 152 Ο _____ είναι εκεί. Κρίση: _____
(ο πάσσαλος)
- 153 Στον πλαστικό _____ σημαντικών Κρίση: _____
μνημείων... (ο διάκοσμος)
- 154 Βλέπω τους _____ Κρίση: _____
(ο τραγέλαφος)
- 155 Η _____ γίνεται χωματόδρομος. Κρίση: _____
(η άσφαλτος)
- 156 Η _____ βρίσκεται εκεί. Κρίση: _____
(η αρένα)
- 157 Ο _____ υπάρχει. Κρίση: _____
(ο διθύραμβος)
- 158 Βλέπω τον _____ Κρίση: _____
(ο υπέρμαχος)
- 159 Τα ταξιά των _____... Κρίση: _____
(ο ταξιτζής)
- 160 Η _____ βρίσκεται εκεί. Κρίση: _____
(η αψίδα)
- 161 Τα πόδια των _____ είναι κοντά. Κρίση: _____
(η κότα)

Μπράβο σας! Τελειώσατε! Πολύ σας ευχαριστούμε.

APPENDIX D

RUSSIAN FIRST PERSON SINGULAR NON-PAST GAPS

Halle (1973) claimed that approximately 100 Russian verbs have paradigmatic gaps in the first person singular non-past, but he did not provide a list of these gaps. Based on a systematic search of the online version of Ožegov (1972),¹⁰⁵ a less thorough search of eight other major Russian grammars and dictionaries (Avanesov 1983, Barxudarov et al. 1963, Graudina 2001, Okuntsova 2004, Rozenthal 1966, Švedova 1982, Ushakov 1974, Zaliznjak 1977), and miscellaneous other sources, Maria Alley, Bryan Brookes and I were able to identify sixty-nine such words, after collapsing perfective and imperfective pairs, reflexive and non-reflexive pairs, etc. These words are given below. Where two words are given in the same cell, each was listed as having a gap, independently of the other. Other Russian words which share the same root, but which are not listed here, should not be assumed to have regular first person singular non-past forms. The correct interpretation would be that there is not enough information provided in the dictionary entries to know whether such forms have gaps.

The status of some of these words as first person gaps is questionable because it is doubtful that a person would have reason to use the first person singular form to any significant degree. For example, I would not expect *шелестеть* / *šelestet* ‘to rustle (of leaves)’ to appear in the first person singular for purely semantic reasons, and without an

¹⁰⁵ <http://starling.rinet.ru/cgi-bin/main.cgi?root=/usr/local/share/starling/morpho&morpho=1>

expectation that there should be a form, this example would not meet the criteria for a paradigmatic gap. Nonetheless, only a few examples may be explained in this way, and all of the most commonly cited gaps are semantically plausible, even likely, in the first person singular. For the sake of completeness, I provide here all of the words which the sources listed as having first person singular gaps, regardless of potential semantic issues.

The forms marked with a √ were listed as having first person singular non-past gaps in at least five sources. On average 2.9 dictionaries listed any given gap (median 2).

		WORD	TRANSLITERATION	GLOSS
1		басить	basit'	'to speak or sing in a deep voice'
2	√	бдеть	bdet'	'to keep watch'
3		бороздить	borozdit'	'to furrow'
4	√	бузить, набузить	buzit', nabuzit'	'to protest'
5		выздвездить	vyzdvezdit'	'to cover with stars (??)'
6	√	галдеть, загалдеть, погалдеть	galdet', zagaldet', pogaldet'	'to make a hubbub'
7		гвоздить	gvozdit'	'to hammer'
8		гнушить	gnusit'	'to speak in nasal tones'
9		голосить	golosit'	'to yell'
10		грезить	grezit'	'to dream'
11		гудеть	gudet'	'to honk'
12	√	дерзить, надерзить	derzit', naderzit'	'to be imprudent'
13		дубасить	dubasit'	'to beat'
14	√	дудеть, подудеть, продудеть, дудить	dudet', podudet', produdet', dudit'	'to play the pipe'
15		елозить	elozit'	'to go crawling about'
16	√	ерундить, наерундить	erundit', naerundit'	'to do stupid or funny things'

Continued

Table 63: A potentially complete list of the Russian 1st person singular non-past verbal gaps

Table 63 continued

		WORD	TRANSLITERATION	GLOSS
17		желтить	želtit'	'to turn yellow'
18		застить	zastit'	'to stand in someone's way'
19	√	затмить, затмиться, тмить	zatmit', zatmit'sja, tmit'	'to eclipse'
20		зудеть	zudet'	'to itch'
21		капризить, капризиться	kaprizit', kaprizit'sja	'to be capricious'
22		колесить	kolesit'	'to go/drive around'
23	√	кудесить, накудесить	kudesit', nakudesit'	'to do magic'
24		кучить	kučit'	'to earth up (??)'
25		ладить	ladit'	'to get along well'
26		лазить	lazit'	'to climb'
27		лебезить	lebezit'	'to fawn'
28		лисить	lisit'	
29		лихорадить	lixoradit'	'to have a fever'
30		лямзить, слямзить	ljamzit', sljamzit'	'to steal'
31		ляпсить, сляпсить	ljapsit', sljapsit'	
32		мерзить	merzit'	
33		мутить	mutit'	'to stir up'
34		нудить	nudit'	'to compel'
35		обезлесить	obezlesit'	'to deforest'
36		обезлошадить	obezlošadit'	'to steal a horse'
37		обессмертить	obessmertit'	'to make something immortal'
38		облесить	oblesit'	
39		обрусить	obrusit'	'to Russify'
40		обуржуазить, обуржуазиться	oburžuazit', oburžuazit'sja	'to make bourgeoisie'
41		отчудить	otčudit'	'to alienate; to estrange'
42	√	очутиться	očutit'sja	'to find oneself; to come to be'
43		ощутить	oščitit'	'to feel'
44		парусить	parusit'	'to sail'
45		переубедить, переубедиться	pereubedit', pereubedit'sja	'to change one's mind'

Continued

Table 63 continued

		WORD	TRANSLITERATION	GLOSS
46	√	победить	pobedit'	'to win'
47		погалдеть	pogaldet'	'to make a lot of noise'
48		потчудить	potčudit'	'to behave in a weird way'
49		предубедить	predubedit'	'to be prejudiced (against)'
50		претить	pretit'	'to sicken, to nauseate'
51		приютиться	prijutit'sja	'to find shelter'
52		пылесосить	pylesosit'	'to vacuum'
53		разубедить, разубедиться	razubedit', razubedit'sja	to dissuade (from)
54	√	рысить, зарысить, прорысить	rysit', zarysit', prorysit'	'to trot'
55		сбондить	sbondit'	
56		сбрендить	sbrendit'	'to go crazy'
57	√	соседить	sosedit'	'to be a neighbor'
58	√	убедить, убедиться, бедить	ubedit', ubedit'sja, bedit'	'to persuade'
59		угобзить	ugobzit'	
60		угораздить	ogorazdit'	'to urge; to make (do s.t.)'
61	√	умилосердить, умилосердиться	umiloserdit'	'to take pity on'
62		форсить	forsit'	'to swagger, to show off'
63		чадить	čadit'	'to smoke, to emit fumes'
64		чтить, почитать	čtit', počtit'	'to honor'
65	√	чудесить, начудесить	čudesit', načudesit'	'to do magic'
66	√	чудить, начудить	čudit', načudit'	'to behave in a weird way'
67	√	шелестеть, зашелестеть, пошелестеть, прошелестеть	šelestet', zašelestet', pošelestet', prošelestet'	'to rustle (of leaves)'
68		шерстить, перешерстить	šerstit', perešerstit'	'to irritate (of a garment)'
69	√	шкодить, нашкодить	škodit', naškodit'	'to misbehave'

APPENDIX E

SURVEY INSTRUCTIONS AND STIMULI: RUSSIAN GAPS

E.1. Instructions as they were presented to subjects

Добро пожаловать! В данном эксперименте мы зададим вам несколько вопросов о том, как вы используете русский язык. Эксперимент состоит из двух заданий. Чтобы продолжить, нажмите на любую клавишу.

Задание 1: Насколько хорошо вы знаете это слово?

В этом задании вы увидите на экране слово красного цвета, например „Привет”. Ваша задача – определить, насколько хорошо вы знаете это слово. Нажмите на любую клавишу, чтобы продолжить инструкции...

Вы также увидите цифры синего цвета от 1 до 6:

6=Я часто использую это слово.

5=Я иногда использую это слово.

4=Я использовал(а) это слово всего пару раз.

3=Я видел(а) это слово, но сам(а) его не использую.

2=Я могу угадать значение слова, но никогда его не слышал(а).

1=Я не знаю это слово.

Нажмите на клавишу с номером, соответствующим вашей оценке того, насколько хорошо вы знаете слово красного цвета. Постарайтесь отвечать как можно скорее и будьте как можно более внимательны и точны в своих ответах! Нажмите любую клавишу, чтобы продолжить инструкции...

У вас будет возможность выполнить два тренировочных упражнения, чтобы привыкнуть к этой оценочной шкале. В первом упражнении вы увидите полное описание каждой цифры в шкале. Во втором вы увидите сокращенные описания. Готовы? Нажмите любую клавишу, чтобы начать первое тренировочное упражнение!

Давайте потренируемся!

Насколько хорошо вы знаете это слово?

6=Я часто использую это слово.

5=Я иногда использую это слово.

4=Я использовал(а) это слово всего пару раз.

3=Я видел(а) это слово, но сам(а) его не использую.

2=Я могу угадать значение слова, но никогда его не слышал(а).

1=Я не знаю это слово.

Молодец! X секунд на один ответ. Постарайтесь отвечать быстрее!

Вы закончили первое тренировочное упражнение. Помните, что во втором упражнении оценочная шкала остается той же, но описания, которые вы увидите сокращены. Готовы? Нажмите любую клавишу, чтобы начать второе тренировочное упражнение.

Давайте потренируемся!

Насколько хорошо вы знаете это слово?

Использую его? 4=пару раз 5 6=часто

Знаю его? 1=не знаю 2 3=знаю

Молодец! X секунд на один ответ. Постарайтесь отвечать быстрее!

Вы закончили тренировочные упражнения. Если у вас есть какие-то вопросы, задайте их экспериментатору. Готовы? Нажмите любую клавишу, чтобы начать эксперимент.

Поздравляем! Это конец первой части эксперимента. Вы выполнили 25% эксперимента. Пожалуйста, отдохните. Когда будете готовы продолжать, нажмите любую клавишу.

Задание 2: Назовите слово

В этой части эксперимента вы увидите предложение с пропуском, написанное зеленым цветом: „Я очень _____ яблоки”. После того, как вы прочитаете это предложение, нажмите любую клавишу и на экране под предложением появится слово красного цвета: “любить”. Назовите слово красного цвета в правильной форме, необходимой, чтобы заполнить пропуск в предложении: „Я *люблю* яблоки”. Постарайтесь отвечать как можно скорее и будьте как можно более внимательны и точны в своих ответах! Нажмите любую клавишу, чтобы увидеть продолжение инструкций...

После того, как вы назовете нужную форму слова красного цвета, вы должны будете ввести число, отражающее то, насколько вы уверены, что форма, которую вы только что назвали, правильна. Введите большое число, если вы уверены в правильности данной формы и маленькое число, если вы не уверены в его правильности. Важно не конкретное число, которое вы выберете, а относительные значения, которые вы дадите различным словам по сравнению друг с другом. Если вы вдвойне уверены, что второе слово правильнее, чем первое, введите число, которое в два раза больше. Если вы в два раза менее уверены, введите число в два раза меньше и т.д. Во время эксперимента, вам может показаться, что ваша шкала меняется и что вы забыли, что вы говорили раньше. Постарайтесь не думать об этом. Вы можете выполнить это задание гораздо лучше, чем вам кажется! Если у вас появились какие-либо вопросы, задайте их экспериментатору. Нажмите любую клавишу, когда будете готовы начать тренировочное упражнение.

Давайте потренируемся!

Назовите слово в форме, необходимой для заполнения пропуска в предложении.

Молодец! X секунд на один ответ. Постарайтесь отвечать быстрее!

Насколько вы уверены, что эта форма слова правильна?

Вы закончили тренировочное упражнение. Если у вас появились какие-либо вопросы, задайте их экспериментатору. Готовы? Нажмите любую клавишу.

Поздравляем! Вы выполнили 50% эксперимента. Молодец! Пожалуйста, отдохните. Когда будете готовы продолжать, нажмите любую клавишу.

Конец эксперимента. Спасибо за ваше участие. Пожалуйста, найдите экспериментатора и получите у него (нее) компенсацию за участие и объяснение эксперимента. До свидания!

E.2. Stimuli

Russian word

фузить
змлендить
мурасить
надмозить
забечиться
встручить
огурить
забунить
бурвать
сдеговывать
чусать
зилеть
мнетировать
ютать
фугать
пражать
сшавать
гучать
сивнуть
мить
сжуреть
привать
понить
свимать
слутать
навать
кухнуть
защитить
струсить
грузить
кряхтеть
превозносить

ходить
тормозить

Russian sentence

Ты все время дуешься и ____ !
Они наверняка завтра ____ .
Он к ней постоянно цепляется и ____ ее.
Когда вы купите дом, обязательно ____ его.
Если они ____, я накажу их.
Мы пойдем в кафе и ____ это задание.
Вы ____, если увидите ее?
Ты завтра ____ мне книгу?
Мы всегда отдыхаем и ____ после работы.
Когда ты дома, ты сам ____ ?
Она ____ каждый раз, когда приходит сюда.
____ можно и дома, но лучше на даче.
У нас в городе сейчас часто ____ .
Когда у вас есть время, вы часто ____ ?
Что ты тут сидишь и ____ ?
Они всегда звонят друг другу и ____ .
Завтра мы ____ все, что сможем.
Вы ____, когда вам страшно?
Они ____, если их попросить.
Когда она звонит, мы все ____ .
Ты ____ со мной послезавтра?
Вы здесь работаете или ____ ?
Как только он приедет, сразу ____ .
Они ____, только когда спешат.
Хотите мы ____ ?
Ты часто ____, когда путешествуешь?
Она ____ через два дня.
Кто ему поможет, кто его ____ ?
Не побоишься его, не ____ ?
Копаем. ____ . Возим.
Зрители покашливают, ____ .
Женщины любят скромных мужчин, ____ мужскую скромность.
Когда есть время, мы ____ в театр.
Путин велел правительству ____ инфляцию.

оповестить
зависеть
выпятить
опустить
наметить
процедить
штукатурить
держать
скандалить
эканомить
острословить
разрешить
утеплить
кухарить
сандаить
сморщиться
тараторить
напылить
мыслить
тарабанить
дебоширить
грубить
поделить
молиться
храбриться
обобщить
соскоблить
помнить
прицениться
дарить
таранить
халтурить
гугнить
приобрести
пырнуть
мигнуть
таять
толкнуть
куковать
пропороть
сдуреть
хапать
нашить
жадничать
важничать

Если что-то случится, мы вас сразу ____.
Здоровье ____ от состояния души.
Бывает обидится, ____ губу, молчит.
Если что, вы ____ меня пораньше?
План составим сейчас, а собрание ____ на май.
Лук пожаришь, а бульон ____ до осветления.
Красим, белим, ____.
Сколько можно? Вы нас за идиотов ____?
Он не ____, а протестует!
Вот ____ денег, и в отпуск съездишь.
Он всегда что-то рассказывает, ____.
А если мы попросим, мать ____ нам погулять?
К зиме автобусы отремонтируют и ____.
Ты и в доме убираешь и ____.
Сидит и ____ пол.
С годами кожа постареет и ____.
Она много говорит, ____ без умолку.
Сейчас приедут с дачи, ____ везде!
Почему мы чувствуем и ____ по-разному?
Перестань ____!
Он не сквернословит и не ____.
Почему ты пререкаешься и ____ взрослым?
Давай ____ яблоко поровну.
Мы ходим в церковь и часто ____.
Ты все ____, надеешься на чудо.
Они встретятся и ____ свои наблюдения.
____ с картины верхний слой краски и удивись!
Вы ____, что с вами произошло?
Сначала узнаешь, где купить выгодно, ____.
Он ее балует, часто ____ подарки.
Машина выезжает на дорогу и ____ дерево.
Мы никогда не ____, все делаем на совесть.
О чем его не спросишь, он всегда ____.
Вот ____ машину, научишься водить.
Как он отреагирует? ____ ножом?
Увидишь его, тормознешь, ____.
Весна, во дворе ____ снег.
Что происходит, что ____ людей на преступление?
Тишина. Только где-то вдали ____ кукушки.
Если вдруг ____ колесо, позвонишь мне.
Будем сидеть на одном месте, пока не ____.
Вы же у простого народа воруете и ____!
Быстро ____ и продать много рубашек—трудно.
Ты же все время ____, всего жалеешь.
Она всю жизнь зазнается, ____.

возражать
вклеивать
досаждать
забраковать
замерзнуть
сучать
навлекать
налиновать
обожать
коченеть
окроплять
поручать
поворковать
подавлять
подражать
предвкушать
реветь
хаять
спугнуть
чихнуть
сболтнуть
вернуть
заткнуться
рвануть
забыть
мешать
влиять
внушать
вкушать
вопить
промокнуть
выбыть
бледнеть
мешкать
довлеть
пьянеть
чокаться
мужать
ветшать
изучать
отрицать
воплощать
искажать
затихать
затолкать

Мы не просто сомневаемся, а категорически ____ !
Сейчас в проездной обычно ____ фотографию.
Реклама отнимает время и ____ зрителям.
Он этот проект одобрит или ____ ?
Если ____, наденете шапку.
О доме думаешь? ____ небось?
Работает он плохо, ____ на себя неудовольствие начальства.
Я перепишу стихотворение, если ты ____ бумагу.
Она любит сладкое, просто ____ шоколад.
Так холодно, ноги просто ____.
Он берет святую воду, ____ ей ребенка.
Если ты ____ это Нине, она все сделает.
Соберутся парочки: посидят, ____.
Она не реагирует, ____ свои чувства.
Она берет пример с подруги, ____ ей.
Все ждут, с нетерпением ____ фейерверк.
Она сильно расстраивается, ____ .
Других ____ легко!
Не подходи близко к птице, ____ !
Если он ____, значит правду говоришь!
Они не проговорятся, не ____ лишнего?
Если найдем вашу книгу, обязательно ____ .
Когда ты наконец ____ ?
Брошу все, ____ на море!
Вы сделаете то, что обещали, не ____ ?
Дети бегают и ____ взрослым.
Вы работаете с ней и на нее ____ .
Идея эта мне не нравится, не ____ доверия.
Они ликуют, ____ плоды своего труда.
Они жалуются, ____ к нему.
Если не возьмешь зонтик, ____ !
Если заболете, ____ из соревнования.
Он всегда ____, когда волнуется.
Давай быстрее, что ты ____ ?
Ему не везет, над ним ____ злой рок.
Пьем много, но никогда не ____ .
Будем говорить тосты, ____ .
Он быстро взрослеет, ____ .
Идет время, наши дома ____ .
Она учится в институте и ____ химию.
Что бы ни случилось, они всегда все ____ .
Пора ____ мечты в жизнь!
Зачем ты врешь, ____ факты?
Заканчивается день, все ____ .
Будешь сопротивляться, мы ____ тебя силой!

ошалеть
донимать
размещать
козырять
играть
ерничать
стирать
изменять
дать
жесть
пойти
мёрзнуть
сбрить
кольнуть
сбавлять
щипать
сыпать
хлестать
кудахтать
махать
пахать
плескать
полоскать
хныкать
ощутить
защитить
зачитить
спускаться
капать
победить
посадить
замедить
решаться
кропать
убедить
находить
кончать
клепать
дерзить
сглазить
керзить
пырнуть
щипать
бузить
струсить

Сколько еды! ____ можно!
Если ____ изжога, сходите к врачу.
Принимаем заявки и ____ объявления.
Идет парад, военные ____ генералу.
Когда собираемся, ____ в карты.
Не стоит ни плакать, ни ____ .
Она сама готовит, сама ____ .
Она не любит мужа и ____ ему.
Если хочешь, мы ____ тебе этот фильм.
Ненавижу, когда ____ траву.
Завтра встанем пораньше, ____ на рынок.
Ну что ты ____ тут, заходи!
Переоденешься, ____ бороду.
Бывает ____ сердце и дышать невозможно.
Поезд мчится и не ____ скорость!
Просыпаешься, ____ себя за руку—неужели сон?
____ заварку в чайник, заливаем кипятком.
Тоскливо. На улице ____ дождь.
Квохчут и ____ куры во дворе.
Мимо проплывает пароход, пассажиры радостно ____ нам.
Они работают, на покладая рук, ____ как лошади.
Вокруг тишина; тихо ____ прибой.
Когда горло болит, он его ____ ?
Говорят, что все дети когда-либо ____ .
Когда приду домой, ____ огромное облегчение.
Сделаю все возможное, ____ страну!
Сначала поем, потом ____ их.
Выхожу из дома, ____ по лестнице.
У меня насморк, капли ____ каждый день.
Если захочу, всех врагов ____ .
Завтра куплю и ____ дерево.
Завтра ____ все, что надо.
Сомневаюсь, не ____ купить машину.
Сижу за компьютером, ____ статью.
Если постараюсь, ____ его в своей правоте.
Я всегда ____ то, что ищу.
Все, ____ валять дурака, начинаю работать.
Я сейчас ничего не ____ такими клепками.
Я вам не перечу и не ____ .
Не буду тебя хвалить, а то ____ еще.
Я никогда не дуюсь и не ____ .
Пикнешь, я тебя ____ ножом!
Сижу на полянке и травку ____ .
Я часто кричу и ____ .
Ни за что не побоюсь и не ____ !

фузить
боднуть
сыпать
зудеть
студить
мигнуть
хлестать
лазить
сузить
базить
хаять
блистать
сбрентить
ссадить
змлендить
куснуть
кудахтать
колесить
завесить
толесить
колдовать
махать
ладить
съездить
надить
уткнуться
пахать
очутиться
охотиться
оретиться
вливаться
гудеть
твердить
шудеть
толкнуть
грезить
грузить
дрезить
влипнуть
плескать
приютиться
пресытиться
куковать
полоскать
дудеть

Когда мне грустно, я всегда ____.
Где ____, там кровь пролью.
Напоминаю о прошлом, ____ соль на раны.
Я не ____, я о тебе беспокоюсь.
Варю яйца, ____ их в холодной воде.
Посмотрю на тебя и ____.
Хочу пить и потому ____ воду.
В походы не хожу и по горам не ____.
Подумаю и ____ число подозреваемых.
Я всегда встаю и ____ во время.
Я никогда не жалуюсь и никого не ____.
Учусь плохо, успехами не ____.
Я скоро с вами совсем ____!
Платите или я вас ____ на следующей остановке!
Вот возьму и ____!
Дай, я хлеба ____!
Я ____, а меня никто не слушает.
Я и сейчас ____ по свету.
Завтра куплю шторы и ____ окно.
Летом я отдыхаю и ____.
Я каждый день гадаю и ____.
Стою на берегу и ____ руками.
Соседей недолжбливаю, не ____ с ними.
Завтра позвоню и ____ к бабушке.
Я всегда ставлю и ____ все на место.
____ головой в подушку и заплачу.
Сам землю не ____ и ничего не сею.
Растеряюсь, если ____ в незнакомом месте.
Сам веду хозяйство, сам ____.
Как только приду домой, ____.
Чувствую, ____ в ваш коллектив.
Сижy, ____ своим басом.
Настаиваю на своем, ____ одно и то же.
Я по пустякам не шумлю и не ____.
Толкнешь меня, я ____ в ответ!
Думаю о нем, ____ наяву.
Сам ____, сам отвожу.
Когда меня ругают, я ____.
Чувствую, сейчас ____ в какую-нибудь историю.
Отдыхаю на море, ____ в воде.
Бывало, ____ на скамеечке, слушаю ее рассказы.
Я ем, пока не ____.
Сижy теперь в офисе, ____.
Я сама стираю и ____ белье.
На рояле не играю и в дудку не ____.

кряхтеть
хапнуть
рыскать
хныкать
тыкать
внимать
дубасить
пробасить
мурасить
пропороть
стонать
голосить
загасить
лапать
елозить
заскользить
омозить
сдуреть
мутить
вкатить
нутить
стрельнуть
лебезить
проказить
ремезить
хапать
басить
вмесить
васить
тухнуть
чадить
прудить
бадить
нашить
гвоздить
взводить
двездить
выжать
нудить
ссудить
вдунуть
пылесосить
превозносить
задегосить
жадничать

Я ворочаюсь и ____ во сне.
Будет возможность, я ____.
Ищу книгу, ____ везде.
Сижу и ____.
Закрываю глаза и ____ в экран.
Смотрю на него, жадно ____ его слова.
Играю громко, просто ____ по клавиатуре.
Позвоню ему и ____ поздравление.
Я редко сижу и ____.
Нужно будет, я его штыком ____.
Лежу в кровати и ____ от боли.
Я никогда не кричу и не ____.
Буду уезжать, сам ____ костер.
Все порчу, ____ одежду грязными руками.
Все время верчусь, ____.
Если я ____, обязательно упаду!
Сначала спрошу у него, потом ____.
Я скоро с вами совсем ____!
Я все время строю козни, ____ воду.
Если пойдет дождь, ____ велосипед в гараж.
Стою в очереди, ____.
Дай-ка я ____ разок!
Я никогда ни хитрю, не ____.
Раньше я проказила, я сейчас я не ____.
Часто думаю об этом, ____.
Я ____ все, что попадает на глаза.
Говорю громко, ____.
Возьму сахар, ____ его в тесто.
Все делаю сама. И ____ сама.
Ты дома, а я на работе ____.
Занимаюсь хозяйством, ____ утюгом.
Деревья высаживаю, пруды ____.
Работаю много, ____.
Буду готовиться к лету, ____ юбок и сарафанов.
Пилю, крашу, ____.
____ курок и стреляю.
____ редко, только когда мне плохо.
Пойду-ка я ____ сок из лимона.
Я никогда не жалуюсь и не ____.
Приезжай ко мне, ____ тебе денег.
Бог: „Я ____ в человека дыхание.“
Убираю и ____ каждый день.
Люблю его, ____ его способности.
Куплю продукты, ____.
Я часто скуплюсь, ____.

чудить	___ редко, только когда скучно.
удить	___ рыбу и жарю ее.
тудить	Иду домой, ___.
пухнуть	Голодаю, просто ___ с голоду.
лихорадить	Болею, сильно ___.
омолодить	Сниму заговор, ___!
филенадить	Просматриваю фотографии, ___.
всовывать	Одеваю пальто и ___ ноги в сапоги.

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