"PERDÉNTIFA!"

On the Stress Pattern of English
And Its Acquisition by Second Language Learners

A Master Thesis By
Reiniere Aimée Blokhuis
Student No. 3015149
Terschelling 32
3524 AW Utrecht

Supervisor
Mr Prof. Dr. Wim Zonneveld

Utrecht University
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Respect and obey the LORD!
This is the beginning of wisdom.
To have understanding, you must know the Holy God.
Proverbs 9:10

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INTRODUCTION

During my study of English Language and Culture at Utrecht University, in the Bachelor phase as well as during my Master's Degree, I came across various theories on language acquisition. The phenomenon of the language learning ability human beings seem to possess fascinates me, and therefore I decided to write my Master's thesis about a subject related to language acquisition, more specifically about *second* language acquisition; the process of learning a foreign language in addition to one's own first language acquired in the first few years of a person's life.

The L2 language investigated in this thesis is English, for speakers of a variety of L1 languages. One phonological aspect of the English language is word stress. The function of word stress often is to indicate word boundaries in the sound stream of speech, by making 'edge syllables' more prominent, using features such as length, slightly higher pitch or loudness. Not every language is a stress language. Other ways of using such prominence features in speech is, for examples, in tonal patterns, as in tone languages. Generally, all languages can be divided in two main groups: so-called 'accentual' and 'non-accentual' languages. The accentual languages can be divided in those that carry stress, and those that (also) use pitch accents. The non-accentual languages typically use tone patterns. English belongs to the group of (accentual) stress languages.

Although the function of stress often is that of word boundary demarcation, for a stress language to determine where stress actually goes in a sentence or word, the grammar makes use of a language-specific pattern. This stress pattern differs from language to language. According to the Transfer Hypothesis, when acquiring a second language, learners always initially take grammatical information from their mother tongue (L1) and use it in their second language (L2). Therefore they will also firstly use their L1 stress pattern to function as the stress pattern of their L2.

In this thesis I examine the learning difficulties of a group of L2 learners of English with a variety of L1 backgrounds. That is, I investigate the extent to which L2 speakers of English have acquired the English stress system, and – possibly – the extent to which their own L1

word stress patterns (if their mother tongue is a stress language and actually has a word stress system!) still emerges in their L2 English. To find appropriate L2 speakers, I decided it would be most interesting to examine speakers who need to speak English on a daily basis, without it being their first language. Therefore my investigation involved a trip to London where I stayed for a number of weeks in the East End borough of Tower Hamlets. This area is well known for its many foreign inhabitants with a large range of linguistic backgrounds. It was therefore a perfect environment to find subjects for my project, since by necessity English is indeed these speakers' language spoken in daily life. The full exposure to this second language allows in an interesting way examining the question whether the L2 learners involved are able to acquire the English word stress system – and if so, the extent to which.

To test this word stress system acquisition, I conducted a so-called "stress test" among London East End L2 learners of English. A stress test is a test consisting of words that are phonologically possible in a language, in this case English, but carry no meaning. The subjects had to indicate on which syllable of this nonsense word they believed the stress would be, were this nonsense item an actual English word. In this way, I hoped to gain insight into the word stress knowledge and abilities of these speakers. Roughly speaking, the number of mistakes the subjects make gives an indication of their level of competence, whereas the kind of mistakes they make reveals which aspects of the L2 system they have actually acquired (if any) and which not. The subjects had to fill out a questionnaire, to indicate their first language and the time they spent in an English speaking country. This information is necessary to trace whether an interfering L1 stress pattern plays a role or not, and if so, which role this pattern plays in L2 production.

From the literature of the past few decades, a quite clear picture emerges of the word stress system of English. The predictions of this 'theory of English word stress' can be used to compare the behaviour of the subjects. It is customary in a word stress test, however, in order to correctly interpret the results of the L2 learners, to involve a 'control group' of native speakers of English, mainly to see whether the test actually tests what it should, namely competence in the linguistic system. When the native speaker results conform to the theoretical predictions, we know the test is accurate. When they do not (in hopefully small ways only!), we will have to take those specific cases into account. Eventually, 30 L2 learners of English and 20 native speakers of English each were willing to fill out a test and a survey.

The theoretical framework I use in this thesis is that of Optimality Theory, a framework very popular in current linguistics, and especially so in phonology. As in many other frameworks, in Optimality Theory the linguistic knowledge of a speaker of a language is modelled as a formal grammar, functioning as the description of that knowledge. In Optimality Theory, this grammar takes the form of a constraint hierarchy, and therefore language acquisition is the acquisition of that hierarchy. These constraints contain syntactical, morphological and phonological information, and languages differ in the importance they attach to adhering to certain constraints over others. This holds for different stress systems of languages, for instance. In second language acquisition, a different learning takes place, because L2 learners already have a grammar, that of their L1. According to the Transfer Hypothesis second language learners initially take linguistic information from their first language system and use that information in producing their second language, examples being word order (syntax) or pronunciation (phonology). In Optimality Theory, this implies initially using your L1 hierarchy in your L2. Obviously, (many) mistakes will result because the two hierarchies will be different. Later, continued L2 acquisition will (hopefully) result in a better approach to the new L2 grammar, i.e. the new L2 constraint hierarchy.

Given these introductory preliminaries, the main research question of this thesis is: to what extent have the tested second language learners of English acquired the stress pattern of English?

By trying to find an answer I hope to gain more insight into the process of second language word stress acquisition. I will approach this question in the following way. I will first explain the stress system of English as described in the theoretical literature in the first Chapter. The framework will be that of Optimality Theory. Then, in the second Chapter the methodology will be further explained. The results of the native speakers of English will be discussed and compared with the theoretical predictions in Chapter 3. Subsequently, in Chapter 4 the results of all the L2 learners combined will be discussed, and the next three Chapters deal with the main first language groups found among the East End second language learners, and with the question whether interference by their mother tongue(s) can be found. These languages include Bengali, Afrikaans/Dutch and Greek, for which I had at least four subjects available. Finally, in Chapter 8 conclusions will be drawn.

I hope you will enjoy reading this thesis.

1 THE WORD STRESS PATTERN OF ENGLISH

The phonological aspect of the English language discussed in this thesis is word stress. In languages that have word stress, typically one syllable of a word is more prominent (i.e., has slightly higher tone, is slightly longer, and slightly louder) than the other syllables. (Most of the information of this introductory paragraph is taken from "Trommelen and Zonneveld: Word Stress in Dutch (and English)," a course handout by Wim Zonneveld, based on Trommelen and Zonneveld 1999.) In an English word such as *president*, for instance, [pre] is such a syllable - it has the main stress of the word: ***pre****-si-dent*; and in *computer*, [pyu] has: *com-**pu**-ter*. Not all languages are word stress languages. There are also languages that are true tone languages. They often give high or low tones to certain syllables, often in the form of 'melodies'. When a language is a word stress language (and languages such as English, Dutch, German, Polish and Russian are), then the function of word stress is thought to be to indicate word boundaries in the sound stream of speech. This is deduced from the observation that in many languages the prominent, stressed syllable is at or close to the word edge. This effect is more visible, of course, the longer the word gets. In Finnish, for instance, main stress is always on the first syllable of usually very long words. A secondary stress may occur on a syllable later in the word, as in the word ***kaup****-pa-to-ri* (market square), where main stress is on [kaup] and secondary stress on [to]; but in Finnish the main stress is always at the beginning, i.e. at the left edge, of the word. In Polish, stress is always on the prefinal syllable. In English, stress is more complicated and can be in various places in the word; it usually never is on the final syllable and preferably in pre-prefinal or prefinal position. This can be seen in words like ***han****-di-cap, me-**tro**-po-lis* (both pre-prefinal stress) *ho-**ri**-zon*, *a-**re**-na* and *rho-do-**den**-dron* (prefinal stress).

In 'metrical phonology', which is the area of phonology dealing with word stress, linguists concern themselves with the way stress languages distribute stresses in their words according to a number of clearly recognisable ('universal') and recurring patterns. In many languages the main stressed (most prominent) syllable of a word occurs – indeed – at either the left edge (beginning) or right edge (ending) of the word. At these edges, there is a small 'window' in which main stress may actually occur: stress can be at the perfect edge (perfectly initial or

final) or slightly less perfectly so, but still very close to the edge. Combined, these options result in four stress language groups. These groups are shown in the following table.

	Left edge (initial)	**Right edge (final)**
Perfect edge	Czech, Finnish	French
Slightly less perfect	Southern Paiute (North America): post-initial	English (non-final)

Figure 1

Initial stress and post-initial stress are the result of a left edge window of two syllables. Such a group of two syllables is called a foot. A foot has a certain rhythm in pronunciation. In feet, two rhythmic patterns are possible. When in a foot the first syllable is stressed and the second one unstressed, the foot is said to exhibit a trochaic rhythm; for short, the foot is called a trochee.

Initial stress is therefore trochaic, left edge (as in Finnish). A foot with the first syllable unstressed and the second syllable stressed is called an iamb (this occurs in the Amerindian language of Southern Paiute: main stress on the second syllable of the word). Using the same terminology, perfect final stress, as in French, can be seen to be, within a two syllable right edge window, to be iambic, right edge: ta-DAM at the end of the word. When a language has right edge word stress but stress is not truly final, it will have trochaic feet: Ta-dam at the end of the word. This is the case in English, as illustrated by words such as *ho-**ri**-zon* already mentioned. But the English word stress system has a few twists, which will also have to be taken into account. All of this will be the topic of the next subsection.

1.1 The basic English word stress pattern

As can be seen in the table above, the basic English stress pattern is that of trochaic feet and right word edge stress. Stress is therefore basically in the prefinal syllable of a word. Words that conform to this pattern are ***ki**-lo*, ***lan**-guage, **hus**-band, a-**gen**-da, com-**pu**-ter*, *ga-**ze**-bo, pro-pa-**gan**-da, ma-ca-**ro**-ni*, and many, many others.

These examples also show the type of words that a word stress analysis usually deals with; namely words with no morphological structure, i.e. an ‘underived’ word. This means words with affixes are not treated in a word stress analysis, and neither are compound words. So,

words with clear morphological structure such as *random-ness, difficult-y, mountain-top* and *security-measure* are not dealt with. The reason for this is that morphological structure in a language such as English can crucially interfere with word stress, i.e. many morphologically structured words have a separate stress pattern.

Although prefinal stress (right edge, trochaic) is the basic English stress pattern, there are also many English words with preprefinal stress, such as ***han***-*dicap*, *me*-***tro***-*po*-*lis* (these were already mentioned above), and *a*-***me***-*ri*-*ca,* ***cro***-*co*-*dile*, *har*-***mo***-*ni*-*ca*, ***fa***-*mi*-*ly* and many more. How does the stress pattern of these words come about? The answer lies in two properties of the English word stress system, which can be discussed in two steps. They are known as Extrametricality and Quantity Sensitivity, and together they account for the typical co-occurrence of prefinal and pre-prefinal stress in the English word stress system.

Extrametricality means that the final syllable of a word is excluded from the stress analysis. So, even though prefinal main stress in English could be seen (as it so far was) as the result of a bisyllabic trochaic foot at the righthand edge of the word, in actual fact the English main stress is often one syllable further to the left than expected because the final syllable is (virtually) systematically disregarded in the word stress system. Hence, feet can exist of both the pre-prefinal and prefinal syllable. We can indicate this by analysing the foot structure of the examples just given as: a-(me-ri)-/ca, (cro-co)-/dile, har-(mo-ni)-/ca and (fa-mi)-/ly. In these examples, within each pair of parentheses feet are trochaic, resulting in pre-prefinal stress effectuated by extrametricality of the final syllable, indicated here by a slash.

Secondly, what about the examples of prefinal stress (***hus***-*band,* *a*-***gen***-*da*, *pro*-*pa*-***gan***-*da*, etc.) that were used as our original material for arguing that English is a right-edge trochaic language? Are they exceptions? The answer is no, because this is where the notion of Quantity Sensitivity starts playing an important role. Quantity Sensitivity means that the so-called weight of syllables matters in English to determine where stress goes in a word. There are ‘heavy’ and ‘light’ syllables. A light syllable is one that exists of minimal content; ending in just a short vowel is typical of the English ‘light’ syllable. Heavy syllables are pretty much everything else, so for example ‘closed’ syllables that end in a consonant, syllables with tense vowels or syllables that contain diphthongs. Generally speaking: syllables that contain more phonological material than the above mentioned short vowel. An example with a combination of heavy and light syllables can be seen in a word like *pro*-*pa*-***gan***-*da*: [gɑn] is a closed and

thus heavy syllable, whereas all the others are open syllables with short vowels and thus light. *a-**re**-na* has a heavy syllable [ri:], because the vowel in this syllable is tense; the others are again light syllables.

When it comes to English it is necessary to make this distinction (i.e. the language is sensitive to quantity), because heavy syllables attract stress. What happens in the examples discussed so far, combining Extrametricality and Quantity Sensitivity is this: pre-prefinal stress is the result of Extrametricality and a trochaic foot. Because of Extrametricality, which excludes final syllables from the word stress analysis, the basic stress pattern of English shifts one syllable from the right word edge towards the left. The ideal place for main stress in a word now becomes the pre-prefinal position; stripping the final syllable away results in a trochaic rhythm starting from the right word edge (minus one syllable), with main stress on the trochee that is closest to the right. We have seen this in *a-**me**-ri-ca, **cro**-co-dile*, *har-**mo**-ni-ca* and ***fa**-mi-ly*.

In *pro-pa-**gan**-da* and *a-**re**-na* and similar examples with prefinal stress, the final syllable is also Extrametrical (since this is simply the rule in English), but Quantity Sensitivity interferes: the prefinal syllable is stressed because it is heavy. In our representation using foot brackets, this will give: *pro-pa-(gan)-da* and *a-(re)-na.* Informally, this notation brings out what is going on in English Quantity sensitivity: the heavy syllables are regarded so heavy that they count as if they can be considered bisyllabic trochaic feet.

1.2 Grid representations

The procedure sketched so far can also be visualised in the so-called grid representation, which is the way metrical phonology represents word stress. A grid works as follows (see illustration below). From bottom to top, the word and three stress levels are shown. The word is represented in syllables. Every syllable then receives a cross in syllable level 0. Subsequently, according to the specific language of the word the grid is dealing with, the language rhythm determines which syllable receives a second cross in the secondary stress level. The rhythm can be either trochaic or iambic, depending on the feet rhythm in that language. The rhythm starts at the right or left edge of the word, depending on which side main stress is located in words of that language. Finally, in the top level, a third cross indicating main stress is given to either the rightmost or leftmost top, again depending on whether the language places stress on the left or right side of the word. (Zonneveld, 2010).

To illustrate the above, consider the grid structure of a word such as a-(me-ri)-ca:

2	**Main stress** level	x
1	**Secondary stress** level	x
0	**Syllable** level	x x x /x
Word in syllables		a (me ri) ca

This grid can be used to express the crucial features of the English stress system, which implies stress rightmost in a word and trochaic feet, excludes the final syllable from the system (Extrametricality) and is sensitive to heavy syllables (Quantity Sensitivity). What we see here is that firstly every syllable receives a mark. Then, the syllable [kɑ] is 'cut off' by Extrametricality for it is a final syllable. Since English is a right edge trochaic language, a trochaic rhythm starts from the then rightmost syllable [rɪ] to the left. Only one full trochee can be formed: this right edge English trochee is represented by [mɛ-rɪ], so an extra grid mark is put on top of the syllable [mɛ] which then is the only second-level cross (so 'closest to the right') and consequently receives main stress.

This is what the grid looks like for the word ***fa****-mi-ly*:

2	**Main stress** level	x
1	**Secondary stress** level	x
0	**Syllable** level	x x /x
Word in syllables		(fa mi) ly

[fɑ-mɪ] is the right edge trochee, discounting /–ly because of Extrametricality, and so [fɑ] receives main stress.

As argued above, prefinal stress comes about by Quantity Sensitivity in English; heavy syllables attract stress. This is represented in a grid as follows. The second highest level of the grid represents stress, but not main stress, so much will be clear from the examples above. Thus, saying that "heavy syllables attract stress" implies that a heavy syllable will get a grid mark on this intermediate stress level - simply because it is heavy. Put differently: Quantity Sensitivity in a language implies that its heavy syllables have a grid mark on the second

highest level in a grid representation.

To see how this works, consider the example *com-**pu**-ter*, a word with two heavy syllables, and a final open syllable (assuming we are talking about a British pronunciation in which final –r is not pronounced). The first syllable is closed [kɔm], the second is diphthongal [pyu], and the final one is [tə]. The final syllable is ignored in the analysis (because of Extrametricality), so only [kɔm] and [pyu] receive a grid mark on the intermediate level simply because they are heavy.

```
        x
    x   x
    x   x   /x
(com)(pu)  ter
```

The syllables [pyu] and [kɔm] are heavy syllables, and therefore are (monosyllabic) feet on their own; in the Quantity Sensitivity system they are counting "as if" they are bisyllabic trochees. Main stress, at the highest grid level, is within the rightmost foot, giving a prefinal main stress effect.

Notice that the initial syllable of *com-**pu**-ter* can be called stressed (by Quantity Sensitivity) but not main stressed (for that is the syllable to its right); such a stressed but non-main stressed syllable is called a secondarily stressed syllable. The word *pro-pa-**gɑn**-da* is a good example of a word in which prefinal main stress is combined with initial secondary stress, in a relatively long word. Using the grid again, this is how it works:

```
          x
    x     x
    x   x   x   /x
(pro  pa)(gan)  da
```

[gɑn] is a closed syllable, thus heavy, and thus receives a second level grid mark. The remaining syllables are [prɔ] and [pə], and in English you take the opportunity to also combine them in a trochee, with [prɔ] then receiving a second level mark. Main stress is subsequently given to [gɑn], for it is the syllable closest to the right word edge.

The remaining second level mark on [prɔ] indicates that – in this case from the trochee - this syllable has secondary stress in its pronunciation.

Summarising, the English stress system wants stress preferably in pre-prefinal position, since the last syllable is excluded; it wants feet to be trochaic and main stress in the rightmost foot. This pattern is clearly visible in words like ***pré****-si-dent,* ***á****-ni-mal*, ***fá****-mi-ly*, *a-****mé****-ri-ca* etc. Words with heavy pre-final syllables preferably have pre-final stress, because of Quantity Sensitivity. This can be seen in words like *a-****gén****-da, a-****ró****-ma, com-****pú****-ter, gi-****brál****-tar, ma-ca-****ró****-ni* etc.

1.3 Optimality Theory

So far, the English word stress system has been described here in relatively informal terms, pointing out patterns and discussing which factors play a role. Current metrical phonology, however, goes further than that: it presents a much more formal analysis that captures the system (not only that of English, but of many other – and ideally all – languages) so as to really bring out its properties, also compared to other languages. The theoretical framework currently most frequently used for that is that of Optimality Theory. Optimality Theory (often OT for short) is a theory of language that can be seen as first and foremost a theory of language typology: it expresses the type or family that a language belongs to by using "constraints" that are sharedly "active" (see immediately below) in languages of a single type. All trochaic right edge languages, for instance, share constraints active to a comparable degree in their "grammars". I will give here a necessarily very brief introduction into how this works, by summarising an introduction into OT by Archangeli (1997), used in O.T. class discussions.

Archangeli (1997) describes OT as follows. Optimality Theory, like other models of linguistics, is a generative model that proposes an input and an output and a relation between the two. Inputs are words taken from the lexicon of the grammar (where, for a given speaker, the "words that (s)he knows" are stored), outputs are the same words, but – in our case of this thesis – these words are modified by phonological processes of the languages, or better maybe: adjusted to the phonological needs of the language.

An important role in actually getting from the input to the output (so in defining how phonological adjustments actually take place) is played by two formal OT mechanisms: GEN

and EVAL. GEN (for Generator) creates linguistic objects called candidates, and EVAL (for Evaluator) uses the grammar (which takes the form of a constraint hierarchy, see below) to select the output from the given input candidates provided by GEN.

Central to OT is the notion of "constraint." A constraint is a description of a linguistic situation that is preferred or dispreferred (in technical terminology: unmarked or marked) in languages. To give a first example: in a trochaic language such as English, a trochee as a rhythmic unit is preferred to an iamb. The constraints that languages use are provided by Universal Grammar, in a so-called "pool" called CON (for constraints). In each language-specific grammar, this pool is arranged in such a manner that the constraints that are important for that language are ranked high in the language-specific version of the pool, which is then called a constraint hierarchy. In fact, this rearranged constraint collection is the grammar for that language. This grammar is precisely what is used in an evaluation procedure (EVAL) of candidates produced by GEN, the task of which is to select the actual output forms of the languages, in our case: stressed words.

The following schema briefly shows the operation of the mechanisms of GEN, EVAL and CON in a particular case. The example used is the word *America*, and we are particularly looking at the (correct) stress pattern of this word. In an OT analysis, this is schematically what happens:

input /america/

↓

GEN

↙↓↘

candidate set [a.(mé.ri).ca] [(á.me).(rì.ca)] [a.me.(rí.ca)] [(á.me).ri.ca] [(a.mé).ri.ca] etc.

↘↓↙

EVAL

(by constraints from CON)

↓

optimal output [a.(mé.ri).ca]

Figure 2

Notice that the output is called “optimal”. This should be taken in a language-specific sense: given the demands of the constraints that are important to the language, this is the “best” or “optimal” form from the candidate set.

We will now take a closer look at this schema in Figure 2 and to the role of the input, GEN, CON, and EVAL.

In OT, all inputs are composed from a vocabulary for language representation, a so-called phonetic alphabet, which is also provided by Universal Grammar. As a result, all inputs are linguistically well-formed objects in the sense that the vocabulary does not contain non-linguistic content. The vocabulary consists of consonants, vowels, syllables, and categories like nouns, verbs, etc.

Now the GENerator provides for a certain single input a set of candidate output representations, any one of which may be the optimal output form for the specific input. GEN, too, can only generate linguistic objects. Besides this, GEN has no restrictions in creating candidates. Therefore, the list of candidates (the candidate set) GEN provides for any given input is infinite. (One candidate may have one added element, another two, another three etc. Basically this also means that any input from any language works with the same, infinite candidate set.)

The universal CONstraint set is posited to be part of our innate knowledge of language. This means that every human being possesses the same set of constraints, and that all languages make use of and have access to exactly the same set of constraints. Any constraint may end up being violated in some language: the potential for being violated is a result of the position of a constraint in a particular language’s hierarchy, rather than the property of the constraint itself. A constraint can be stated in a positive way (e.g. ONSET wants every syllable to have an onset), or in a negative way (for example *COMPLEX, which does not allow complex consonant clusters in or between syllables).

In the end, EVALuation is the mechanism that selects the optimal candidate from the candidate set created by GEN. EVAL makes use of the constraint hierarchy. The optimal output, the one candidate selected by EVAL, is the one that best satisfies these constraints. Best satisfaction does not necessarily mean satisfaction of all the constraints; violations of

lower ranked constraints are tolerated in the optimal form, provided that they help avoid violation of some higher ranked constraint. Differences between languages are explained only by their constraint hierarchy: a different ranking of (especially higher ranked) constraints namely results in a different hierarchy, which is a different grammar, which is a different language (Archangeli, 1997).

In an OT analysis, evaluation by the constraint hierarchy for a particular input-to-output case is usually visualised in a so-called tableau. Anttila (1997) briefly explains how such a tableau works. His schematic explanation will be used here. As explained, an OT grammar is a language-specific ranking of the universal constraint pool. In a tableau (see the figure below) this ranking, or hierarchy, is displayed at the top horizontal line. The ranking of the constraints reads from left to right: the leftmost constraint comes first, then the next, and so on. Candidate forms (outputs of GEN) are evaluated by these ranked constraints: they are displayed in the leftmost column of the tableau, not really in some formal order (Gen "randomly" produces the candidates) but often in some order of plausibility. Each constraint performs an evaluation, in a way described in EVAL. Usually, this evaluation entails that a candidate is good or bad in a particular linguistic aspect captured by a constraint. When a candidate is "bad", this is indicated by an evaluation mark in the corresponding constraint column. By evaluating candidates, the grammar (or constraint hierarchy) defines an optimal output form, namely that form that is judged to be best in the evaluation procedure. In actual practice this is the form that receives fewest "bad" marks going from left-to-right in the tableau. Consider the following schematic example:

/input/	A	B	C
candidate 1	*	*!	
☞ candidate 2	*		*

Figure 3

This tableau shows a competition between two candidates. Both violate the highest-ranked constraint A. Violation is indicated by the evaluation mark * (star). This means that A cannot distinguish between the candidates and thus will not affect the output. The evaluation is passed on to constraint B. Since candidate 1 violates B while candidate 2 satisfies B, candidate 1 is judged "better" (or more "optimal") compared to candidate 2, and in fact "wins": it *is* the output. (In OT tableaux, for the reader's ease such a candidate is usually

marked with the ☞ (pointing finger) symbol, as here.) One step later in the hierarchy and therefore in the evaluation procedure, candidate 2 violates C while candidate 1 does not; this fact however is of no importance because B outranks (and so is more important than) constraint C. (Anttila, 1997).

1.4 English word stress in OT

For word stress, for languages that have the phenomenon (recall my introductory paragraph above), an OT account takes the form of a small piece of grammar, in the form of a constraint hierarchy specifically geared towards accounting for a language's word stress system. For English, essentially the output of the hierarchy will be English words with their main word stresses in the correct places: *family* as *fámily*, *agenda* as *agénda*, and so forth. Such an account of English word stress is available from Michael Hammond's 1999 book *The Phonology of English* (1999). As the basis of a word stress grammar of English, he proposes the following constraint set.

ROOTING	Al words have at least one stress and this constraint therefore also implies that each word has at least one foot. This constraint is top-ranked and I will not include it in the tableaus.
ALIGN-R	All feet are aligned with the right edge of the word.
NONFINALITY	The final syllable is not footed (and thus does not receive stress). This constraint is responsible for Extrametricality in English.
TROCHEE	Stress is distributed in the left side of the foot (binary feet have a trochaic rhythm). This constraint can actually as well be part of FTBIN, as shown later on.
FTBIN	Feet are binary.
WSP	This constraint demands heavy syllables to have stress and is therefore responsible for Quantity Sensitivity in the English word stress pattern. (Hammond makes a distinction between heavy syllables with long vowels and those which are closed; class discussion from which this thesis originated, however, revealed that this distinction is probably not necessary. I will not make it here.)

Hammond (1999, pg. 261-67) describes the system by using three English words /agenda/, /america/ and /animal/, which – following the English word stress literature – can be

considered core examples of the English stress system. /animal/ and /america/ both have pre-prefinal stress, whereas /agenda/ with a heavy prefinal syllable has prefinal stress.

The following tableaux show the steps that Hammond takes in order to find the English word stress constraint hierarchy, using these three examples. They show the evaluations of candidate forms by the constraints according to Hammond, displaying the selection of the correctly stressed candidate for these three English words.

/america/	TROCHEE	FTBIN	NONFINALITY	WSP
[a.me.(rí.ca)]			*!	
[a.me.(ri.cá)]	*!		*	
☞ [a.(mé.ri).ca]				
[a.(me.rí).ca]	*!			
[a.me.(rí).ca]		*!		
[a.mé.ri.(cá)]		*!	*	

Figure 4

Hammond's analysis begins with three important constraints that cover three basic properties of the English stress system. These are that feet are bisyllabic (FTBIN demands this), that feet are trochaic in rhythm (made sure by TROCHEE) and that a final syllable should not be footed, in order to express Extrametricality (NONFINALITY takes care of this).

Regarding this tableau, notice the following. First, the 6 candidate forms evaluated are the most plausible ones given the English stress system, but there are in fact many other imaginable (and increasingly weirder) candidate forms supplied by GEN; however, to include them would not serve much purpose, for they will always be rejected by the constraints. Second, WSP does not meaningfully participate in the evaluation because the word *a-**me**-ri-ca* does simply not contain any heavy syllables. Third, there is one candidate that does not violate any of the constraints, this is clearly the "optimal" one; it is in fact also the desired output, showing that our evaluation procedure for this particular form is correct. Fourth, it is a result of the OT logic of evaluation that, when there is such an optimal candidate with no violations, a crucial hierarchy cannot be determined. Every ranking of constraints in a hierarchy is possible if one candidate survives them all, because automatically, under any ranking of constraints, this candidate is the most optimal one.

Now consider the word /animal/: as we shall see, here some ranking can be done:

/animal/	TROCHEE	FTBIN	NONFINALITY	WSP
[a.(ní.mal)]			*!	*
[a.(ni.mál)]	*!		*	
☞ [(á.ni).mal]				*
[(a.ní).mal]	*!			*
[[a.(ní).mal]		*!		*
[a.ni.(mál)]		*!	*	

Figure 5

The correct candidate [(á.ni).mal] violates WSP, because it has an unstressed heavy final syllable. To keep WSP out of the way, it is put last in the hierarchy; thus WSP rejecting the correct candidate at an early stage is avoided. In the current hierarchy, all candidates except the optimal one are dismissed before WSP is reached (note how NONFINALITY plays an important role here, because this constraint never allows a final syllable to be stressed). Such a strategy of eliminating the competition and ending up with the correct (optimal) candidate is, in fact, a common OT procedure.

Hammond finds his definitive constraint ranking in the tableau for /agenda/.

/agenda/	TROCHEE	NONFINALITY	WSP	FTBIN
[a.(gén.da)]		*!		
[a.(gen.dá)]	*!	*	*	
[(á.gen).da]			*!	
[(a.gén).da]	*!			
☞ [a.(gén).da]				*
[a.gen.(dá)]		*!	*	*

Figure 6

Hammond reranks FTBIN to the lowest place in the hierarchy because "WSP[…] must outrank FTBIN," (Hammond 1999, pg. 266). FTBIN is forced to be ranked below WSP because were the ranking the other way around, from the two candidates left after NONFINALITY, the right candidate [a.(gén).da] would be rejected and clearly [(á.gen).da] would win.

This is Hammond's word stress analysis of English, based on three core examples. A number of issues are worth noticing, however; ones that appeared from class discussions on this particular analysis. They run as follows.

First, notice that in the /animal/ tableau, Hammond seem to be wrong in assuming that WSP should be last in the hierarchy because it rejects the optimal candidate. Looking at the tableau, after the evaluation by TROCHEE and FTBIN only two candidates are left: one with correct initial stress, and one with incorrect prefinal stress. Both are actually dismissed by WSP in exactly the same manner, implying that NONFINALITY could as well be ordered after WSP to definitely decide. The optimal candidate will still be selected when we place WSP before NONFINALITY, because WSP does not distinguish between the remaining two candidates.

Second, in the word stress literature FTBIN is often taken to be almost a universal, i.e. a property of word stress systems that is extremely infrequently violated in languages (OT class discussions, also see Kager 1989). In OT, this translates as FTBIN having the status of being a high-ranked constraint in any word stress grammar, and if it is in fact a universal, it will be a top-ranked constraint. (In his description of the Afrikaans word stress system for example (which is in fact the same as the Dutch one described in Trommelen and Zonneveld 1999, Zonneveld 1996, pg. 27) already proposes to put his constraint BIN (demanding feet to be bisyllabic) at the top of the Afrikaans word stress constraint hierarchy). From this perspective, Hammond makes quite a remarkable move by placing FTBIN this low in the hierarchy, and it is worth trying out the more desirable situation: FTBIN top-ranked. The following tableau shows what happens when we do so:

/agenda/	FTBIN	TROCHEE	NONFINALITY	WSP
[a.(gén.da)]			*!	
[a.(gen.dá)]		*!	*	*
X [(á.gen).da]				*
[(a.gén).da]		*!		
[a.(gén).da]	*!			
[a.gen.(dá)]	*!		*	*

Figure 7

By only repositioning FTBIN and leaving the other constraints untouched, the wrong candidate turns out to be selected, namely [(á.gen).da] which has pre-prefinal stress. We need

a candidate with prefinal stress: *a-gén-da*. When taking a closer look at the rest of the constraint order, however, a different and more interesting outcome is obtained when also applying the reordering of WSP that we concluded was possible in our first point raised above: by placing it before NONFINALITY in the hierarchy.

/agenda/	FTBIN	TROCHEE	WSP	NONFINALITY
☞ [a.(gén.da)]				*
[a.(gen.dá)]		*!	*	*
[(á.gen).da]			*!	
[(a.gén).da]		*!		
[a.(gén).da]	*!			
[a.gen.(dá)]	*!		*	*

Figure 8

By only violating low-ranked NONFINALITY, the correct candidate turns out to be optimal: [a.(gén.da)] with stress put on the heavy, prefinal syllable /gen/. Even though this candidate is slightly different from Hammond's most optimal result [a.(gén).da], the same outcome in pronunciation is attained: prefinal main stress in combination with an unstressed final syllable.

We will see now whether this new constraint ranking also works for the other core examples. The following tableaux show the stress properties of /animal/ and /america/.

/animal/	FTBIN	TROCHEE	WSP	NONFINALITY
[(á.ni).(màl)]	*!			*
☞ [(á.ni).mal]			*	
[a.(ní.mal)]			*!	*
[a.ni.(mál)]	*!			*
[a.(ní).mal]	*!			

Figure 9

As can be seen in Figure 9, the right candidate [(á.ni).mal] is selected.

Finally, the tableau for /america/ will determine whether the current constraint hierarchy is adequate to describe the basic stress pattern of English. Notice, however, that we do not even have to give this tableau, because we already concluded that any hierarchy of constraints

would do to give the correct output. This apparently happy position is not fully correct, however, and this is the third issue of my comments. Hammond leaves out of consideration one plausible candidate that is a serious rival, in evaluation, of the optimal one. Consider the tableau below:

/america/	FTBIN	TROCHEE	WSP	NONFINALITY
[(á.me).(rì.ca)]				*!
? [(á.me).ri.ca]				
? [a.(mé.ri).ca]				
[a.me.(rí.ca)]				*!
[(a.mé.ri).ca]	*!	*		

Figure 10

Hammond does not take into account an initially stressed candidate such as [(á.me).(rì.ca)] or even [(á.me).ri.ca]. Especially the latter of these may be interesting because it lacks stress in a final foot. As can be seen in the tableau, [(á.me).(rì.ca)] is eliminated by NONFINALITY, demanding that a final syllable should not be footed. However, the wrong candidate [(á.me).ri.ca] still satisfies all the constraints, together with the right candidate [a.(mé.ri).ca]. The only way to solve this problem is to find a constraint that makes sure [(á.me).ri.ca] is still less desirable than [a.(mé.ri).ca]. This constraint can actually be found among the constraints that Hammond himself proposes (elsewhere in the book) but which has not played a role so far in the account of the core examples of English:

ALIGN-R All feet are aligned with the right edge of the word.

This constraint wants feet to be as close as possible to the right word edge. It is a gradual constraint; this means that it is violated gradually instead of by the binary choice of total violation or satisfaction. The further a foot is away from the right word edge, the more it violates ALIGN-R.

/america/	FTBIN	TROCHEE	WSP	NONFINALITY	ALIGN-R
[(á.me).(rí.ca)]				*!	
[(á.me).ri.ca]					*!**
☞ [a.(mé.ri).ca]					**
[a.me.(rí.ca)]				*!	

[(a.mé.ri).ca]	*!	*			**

Figure 11

As can be seen, from among the two candidates that survive NONFINALITY, the right candidate [a.(mé.ri).ca] is now selected, simply because the foot in [a.(mé.ri).ca] is closer to the right word edge than the foot in [(á.me).ri.ca].

Consequently, we can see that the correct constraint hierarchy to describe the basic word stress pattern in English is:

FTBIN » TROCHEE » WSP » NONFINALITY » ALIGN-R.

As seen in the examples above, the constraint FTBIN could very well be placed at the top of this hierarchy. In order for this modification, compared to Hammond's analysis, to work, WSP should outrank NONFINALITY. Eventually ALIGN-R is necessary in order to keep stressed syllables as close as possible to the right word edge.

Finally, the last note of this chapter is the following. In Hammond's discussion there are some examples of stress in words that seem to act straight against the basic hierarchy. These are words with unexpected, possible final stress, like *ba-ssi-**net*** and *ju-bi-**lee***. Other examples are *po-**lice*** and *kan-ga-**roo***. It will be clear that these words with their actual main stresses could never emerge as optimal from the current hierarchy, because Extrametricality is incorporated as NONFINALITY. Furthermore, unexpected prefinal stress occurs in words such as *va-**ni**-lla* and *pi-ca-**di**-lly*, in which – strangely – a light syllable is stressed in prefinal position. These data are not an artefact of Hammond's analysis, rather any analysis of English stress will have to recognise that the language partly has what is called a 'lexical' word stress system, i.e. the regularities have exceptions.

Hammond tries to explain these exceptional cases by introducing two new mechanisms in his analysis, namely: (i) syllables can be 'accented' in the input, and (ii) a new 'faithfulness constraint' that demands these elements should also appear as stressed in the output; they may not be tampered with. The additional accentual mark in the input can be seen as an expression of the exceptionality of these cases. Although Hammond does not make a point of this, the new type of faithfulness constraint may be needed for those stress languages in which stress is

completely unpredictable: it will be marked in the lexicon (input) and will have to survive in the output in the unpredictable, lexically marked, position.

One example will make clear how this works; the word *bassinet* is pronounced with stress on the final syllable. Hammond suggests a "theory of lexical accent, whereby certain elements are marked to attract stress," (Hammond 1999, pg. 269). Accents are notated with a raised dot, so for *bassinet* the input notation looks like this: /bassinėt/. Then, a constraint like FAITH(AV) (Accented Vowel) is introduced, stating that accented elements must be stressed in the output. In a tableau, Hammond places this constraint before NONFINALITY. To make this ranking work, Hammond also mentions: "Notice that [. . .] vowels that are stressed via accent surface as bimoraic," (Hammond 1999, pg 269).

/bassinėt/	FTBIN	TROCHEE	WSP	FAITH(AV)	NONFINALITY	ALIGN-R	PARSE
[(bássi)(nèt)]				*!	*		
[(bássi)nėt]			*!	*			*
[bass(ínėt)]	*!		*!	*	*		*
[bassi(nét)]					*!		**
☞ [(bàssi)(nét)]					*		

Figure 12

To make a final choice between the candidates with main stress on the final syllable, probably a low-ranked constraint called PARSE, which demands all syllables to be footed, chooses the right candidate. This constraint did not come into action before because of its low rank, but is usually included in a general list of constraints proposed in OT theory. Such a list (including the PARSE constraint) can for example be found in *Optimality Theory* by René Kager (Kager 1999, pg. 451).

I will not comment on whether I think this is the right or wrong way to deal with these – exceptional – cases, merely noting that to say that, even when it is the expressed intention of an OT analysis to come up with "optimal" candidates, this does not mean that it is helpless in the face of a certain measure of exceptionality, such as that found in the English word stress system.

2 METHODOLOGY

As explained in the Introduction, this thesis implies an experimental approach to the second language acquisition of word stress. To test whether second language learners of English (L2 learners for short) are able to acquire the stress system of English (as described in the previous chapter) and are able to apply it even to newly created, English-looking, words, I conducted a test among 20 native speakers of English (to function as a control group, more on this in the next chapter) and 30 L2 learners with different first-language (L1) backgrounds. These L2 learners were all adults. The 30 L2 learners were speakers of the following L1 languages:

Bengali
11 subjects
Age range 21-40, mean age 26,1 years

Afrikaans/Dutch
9 subjects (3 Dutch, 6 Afrikaans)
Age range 27-46, mean age 34,3 years

Greek
4 subjects
Age range 21-30, mean age 24,3 years

Chinese/Thai
3 subjects (2 Chinese, 1 Thai)
Age 20, 25 and 72

Rest group
3 subjects:
1 Czech *age 34*
1 Russian *age 30*
1 Polish *age 37*

This information is deduced from the short survey I took from the L2 learners, which they had to fill out before doing the actual test. This survey was necessary to elicit which language the subjects considered to be their mother tongue, which was the most important aspect in the

research for this thesis. The survey furthermore contained questions about the subjects' age, sex and usage of English. There were specific questions about the age from which the subjects were in touch with English, how long the subjects lived in an English speaking country, what the subjects considered their mother tongue and, as a control question on this, what language their parents spoke at home. The answers on these last two questions matched in every case. In the research, the focus was on comparing the L2 learners' results with the results of native speakers of English.

After completing this survey, all subjects filled out a written test existing of 31 so-called "nonsense words." These are words that are phonologically possible in English, but carry no meaning; they were simply made up for the purpose of the test. In word stress test methodology, using nonsense words is considered highly preferable to using existing words (Pater 1997, pg. 235–236; Van der Pas and Zonneveld 2004, pg. 155-156). It is very difficult to check for a researcher whether a particular subject has ever encountered a given existing word and maybe memorised it, in combination with its stress pattern. If so, using such a word in a test would give information about word knowledge, but not necessarily about word stress system competence. Using nonsense words, and especially using "phonotactically correct" ones, is a way of avoiding this issue; since the subjects cannot possibly have memorized the pronunciation of words they have never encountered, the placement of stress on such words must be indicative of knowledge of the general stress pattern of the language.

Even though phonotactically correct, the words of the test were not just random ones, however: their forms were carefully chosen. In order to be able to test whether the subjects truly acquired the notions of the WEIGHT-TO-STRESS principle (or Quantity Sensitivity) and NONFINALITY (or Extrametricality), it was important to create words of various lengths and with different types of syllables. The words used consist of two, three, four or five syllables and can contain just open syllables (a few examples are *codina, perido* and *rotapily*); but most of them are a combination of various closed and open syllables (like *nesombila, losifantor* and *filantomarist).* On the next page follows a list of the test items used, in order of their syllabic length.

Test Items

Bisyllabic	*Trisyllabic*	*Quadrosyllabic*	*Pentasyllabic*
lacar	bigasta	rotapily	cabofterisant
doruth	vernaytence	misataroo	moltorigasto
renay	montanee	celontara	padolimany
lacad	perido	nesombila	canarontifa
reyno	cabarant	rafaleena	rigadasiter
	centadi	morgarity	nacasbuntera
	codina	losifantor	filantomarist
	pertiny	cafilagont	marilicadent
		perdentifa	

The subjects had to indicate on which syllable of these nonsense words they believed main stress would be, were these English words. They had to do so by softly pronouncing the words to themselves, determining where they believed they put main stress, and then marking this main stressed syllable with a cross in a space above the syllable. This was instructed and explained in the test introduction. This is the core instruction as stated in the introduction of the test:

> Here's how to get started:
>
> 1. Read the word out softly for yourself (so that someone else cannot hear you). Try to decide which syllable you would stress.
> 2. Mark the syllable on this sheet of paper by putting a cross in one of the boxes above the syllable that should be stressed.
>
> EXAMPLE:

	X	
com	pu	ter

> Every word can only receive 1 stressed syllable! Please do not assign more than one X per item.

The test was thus conducted via pen-and-paper. Most of the subjects were able to fill out the test this way. It also turned out, however, that some of them could not decide where to place main stress; I also saw some subjects filling out something else than I heard them pronounce. I took these subjects apart and let them read out the test items to me. In these cases I decided

to interfere: I marked their main stressed syllables on their tests (or corrected them, in case they put a cross on a syllable different from where they actually placed main stress).

In the test, the test items were put in a randomized order (this order can be found in for example Figure 13 in the next chapter and in all other chapters containing test results). Every subject (native speaker and L2 learner) received the same test with the same order of test items. The subjects were tested in either their home environment, in their neighbourhood at the Café Forever Community Centre in East London or at the Café Forever community "weekend away" in Tonbridge which I joined. I stayed at the Café during daytime to address potential subjects and at the weekend away I requested people to fill out a test. Hence, the majority of the subjects belong to the same community and visit Café Forever on a regular basis. I selected my subjects by simply asking them whether English was their first language or not. A handful of subjects were "new" visitors of the Centre or people I addressed while taking a walk in the East London area. At those times I made sure to have copies of the test and pencils with me, to enable potential subjects to take a test at once. Since I became familiar with all my subjects (native speakers and L2 learners), mostly through the community centre and the weekend away, it was not at all difficult to request them to fill out a test for me.

3 THE RESULTS OF THE NATIVE SPEAKERS OF ENGLISH

As explained in the Introduction, a stress test of the kind administered in my thesis project is usually associated with a further test involving an L1 control group. To see whether (British) English-speaking people actually use the same stress system as the one theoretically described in Chapter 1, I tested a group of 20 native speakers of English. They received the same test as the L2 learners of English. All the 20 native speakers were found within the community of East London. Most of them filled out a test whilst on the Café Forever community "weekend away" mentioned in the previous chapter. Another handful filled out the test while I visited them at their home in East London or when I met them at the Café. These 20 subjects were all born and raised by English speaking parents in an English speaking country.

The results of this native speaker control group should show the essence of the OT analysis of the English stress system: from these results, the effects of non-final stress and of stress in heavy prefinal syllables, caused by the high ranking of both the NONFINALITY constraint (or Extrametricality) and the WEIGHT-TO-STRESS principle (or Quantity Sensitivity), should emerge. In other words, the main research question after testing the native speakers was: do the native speakers in their test results behave conforming to the theoretically developed stress system of English?

The following table shows, in their order of testing, the results for all test items by the native speakers of English.

Results of the Native Speakers of English

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
1. bigasta			2	**17**	1	20
2. lacar				7	**13**	20
3. rotapily		**9**	5	5	1	20
4. misataroo		5	4	**6**	5	20
5. celontara		4	4	**11**	1	20
6. cabofterisant	0	**8**	7	4	1	20
7. vernaytence			5	**12**	3	20

8. montanee			7	3	**10**	20
9. nesombila		2	**10**	7	1	20
10. moltorigasto	3	1	1	**15**	0	20
11. doruth				**11**	9	20
12. padolimany	2	*6*	4	*6*	2	20
13. perido			7	**11**	2	20
14. rafaleena		1	2	**16**	1	20
15. renay				9	**11**	20
16. morgarity		3	**13**	3	1	20
17. losifantor		1	2	**15**	2	20
18. cafilagont		2	**11**	4	3	20
19. canarontifa	2	1	**10**	6	1	20
20. lacad				7	**13**	20
21. rigadasiter	0	4	**12**	3	1	20
22. cabarant			**14**	1	5	20
23. nacasbuntera	2	4	**8**	6	0	20
24. centadi			8	**10**	2	20
25. perdentifa		3	**12**	5	0	20
26. reyno				**17**	3	20
27. codina			3	**14**	3	20
28. filantomarist	1	3	**9**	5	2	20
29. marilicadent	2	2	*6*	*6*	4	20
30. pertiny			**13**	7	0	20

Figure 13 Number of subjects: 20
Age range: 21-63
Mean age: 750/20= 37.5 years of age

In order to gain more insight into these results, I will now rearrange them into a new list, arranged according to the most popular pattern. The list itself is divided in subsections: one part (3.1) shows and explains those items with "theoretically correct" results. These results show a majority of the 20 native speakers choosing to main stress the same syllable in these items. The second part (3.2) contains the items that seem to show conflicting results compared to the English stress pattern; in these items, no majority seems to choose one certain syllable to be main stressed. The digit preceding each item shows the number of native speakers that chose to place stress on the bold-typed syllable.

3.1 The "correct" items

17 bi-**gas**-ta, **rey**-no
16 ra-fa-**lee**-na
15 mol-to-ri-**gas**-to, lo-si-**fan**-tor
14 **ca**-ba-rant, co-**di**-na

The items displayed above show results confirming the theory discussed in Chapter 1. Prefinal, heavy syllables as seen in most of the items (in *codina* the prefinal syllable becomes a diphthong [daɪ] and thus heavy) rightfully receive main stress because of the WEIGHT-TO-STRESS constraint. In the other item, *cabarant*, the pre-prefinal syllable is selected, since NONFINALITY excludes a final syllable from the analysis, causing trochees to form one syllable from the right. Because the pre-prefinal and prefinal syllable form the rightmost trochee, the pre-prefinal syllable receives main stress in the basic stress pattern of English.

13 la-**car**, mor-**ga**-ri-ty, la-**cad**, **per**-ti-ny

Morgarity and *pertiny* show results conforming the theoretic prediction; the pre-prefinal syllable receives main stress. *Lacar* and *lacad* both show a divergent final stress preference, and this can have several reasons. First, heavy final syllables in bisyllabic words in English tend to attract main stress (according to Wim Zonneveld in email correspondence, and see Zonneveld 1976). This seems to be a partly exceptional pattern (no NONFINALITY violated) in the English word stress system. Words like *po-**lice**, ma-**chine*** and *con-**trol*** show the same pattern of stress in final, heavy syllables in bisyllabic English words. Second, from personal conversations with several native speakers, after asking them about their choice to stress the final syllable, it emerged that these two words particularly reminded the subjects of French. This might have something to do with the initial syllable [lɑ]. *La* is a feminine article in French and in Spanish, and both languages are taught in British secondary schools. It is therefore common knowledge that *la* means *the* in a foreign language. For this reason, the subjects might have treated the first syllable [lɑ] as an article, and so placed stress on the final syllable, which is then regarded as a monosyllabic word. However, also the entire word could have been treated as a French word, perhaps because of the vowel [ɑ] in both syllables, which may not be very English. A group of bisyllabic words that contain this vowel in both syllables and have final stress are foreign, see for example *ga-**rage**, fa-**cade*** or *ma-**ssage**.* The subjects

might have seen nonsense words *lacar* and *lacad* as two loan words from French. French has a different stress pattern from English; as shown in Figure 1 in Chapter 1, French is a right-edge post-initial stress language. This means that instead of the trochaic rhythm in English, French has an iambic stress rhythm and places stress closest to the right word edge. In the basic stress pattern of French, final stress is therefore rather rule than exception. Coherent with this fact is that there are many French loan words in the English language that have (a possibility of) final stress, like previous examples *ga-**rage*** and *ma-**ssage,*** but also *fi-an-**cée,*** *ba-**llet,*** *ci-ga-**rette***, *ba-ssi-**net*** and many more. By regarding *lacar* and *lacad* as French words, subjects may have almost automatically stressed the final syllable.

12 ver-**nay**-tence, ri-ga-**da**-si-ter, per-**den**-ti-fa

The results for the items above are conforming the theoretic prediction. When pronounced heavy, the prefinal syllable in *vernaytence* rightfully attracted stress, and in *rigadasiter* and *perdentifa* the pre-prefinal syllables were main stressed, according to the basic stress pattern.

11 ce-lon-**ta**-ra, **do**-ruth, pe-**ri**-do, re-**nay**, ca-**fi**-la-gont

Also the results for *celontara, doruth, perido* and *cafilagont* are regular and conforming to the theory. The prefinal syllable in *celontara* can be pronounced heavy, which therefore attracts stress due to WSP. *Renay* shows final stress, which again might be an example of final heavy syllables attracting stress in bisyllabic words, as discussed above. Furthermore, since I introduced myself as Renée to my subjects, a name with final stress and very similar to *renay*, this might have influenced the results. What must be noted is that *do-**ruth*** (9 subjects), ***re**-nay* (9 subjects) and ***pe**-ri-do* (7 subjects) are popular "second options" for main stress. These last two second options (***re**nay* and ***pe**-ri-do*) also confirm the system, while the first second option, bisyllabic word *do-**ruth*** again shows a stress preference in final heavy syllables.

10 mon-ta-**nee**, ne-**som**-bi-la, ca-na-**ron**-ti-fa, cen-**ta**-di

Again the results for the words above are very regular; they nicely display the application of WSP and NONFINALITY. Also popular "second options" that emerge for *montanee, nesombila* and *centadi* confirm the system: ***mon**-ta-nee* (7 subjects), *ne-som-**bi**-la* (7 subjects, which is regular if the vowel in the prefinal syllable is pronounced heavy) and ***cen**-ta-di* (8 subjects).

Final stress in *montanee*, as preferred by a number of 10 subjects, seems diverging but is explainable: there happen to be existing words in English ending in [i:] that, like this nonsense word, have stress in their final syllable. These words are *em-plo-**yee**, ju-bi-**lee**, re-fu-**gee**, trai-**nee**, re-fe-**ree*** etc. The reason for final stress in these words is unclear, but one most plausible reason is that [i:] in some cases is (and in some cases might act as) a suffix, and words with suffixes cannot be dealt with in stress analyses, because in most cases morphological structure affects the stress pattern severely (recall the discussion in chapter 1 on English word stress). There is a chance that 10 native speakers considered *montanee* as part of this group of words ending in [i:], which consistently have final stress, and therefore chose to stress final syllable [ni:].

3.2 "Conflicting" results

9 **ro**-ta-pi-ly, fi-lan-**to**-ma-rist

8 ca-**bof**-te-ri-sant, na-cas-**bun**-te-ra

6 mi-sa-**ta**-roo, pa-**do**-li-ma-ny (pa-do-li-**ma**-ny), ma-ri-**li**-ca-dent (ma-ri-li-**ca**-dent)

The words above show results that do not represent a majority of the 20 tested native speakers; less than half of the native speakers agreed on stress preferences in these items. Still, most words show one "most preferred" stressed syllable; only *padolimany* and *marilicadent* contain two syllables that each have the same "score" for stress preference. Because the results for the items above do not seem to show a general application of the word stress system of English (i.e. a majority of native speakers agreeing on stress placement in an item), and so appear to conflict with this system, these items will be discussed individually below.

Rotapily

When the prefinal syllable is pronounced light, the word stress pattern of English predicts pre-prefinal stress in *rotapily*. However, only 5 subjects actually chose to place main stress in this position. If stress were suitable in a different location than the pre-prefinal syllable, one would expect it to be in prefinal position, for the nonsense word *rotapily* could remind subjects of similar, existing words like *Pic-ca-**di**-lly* or *Chan-**ti**-lly* (both these words have prefinal stress). Though again, only 5 subjects chose for prefinal stress. A number of 9 subjects chose

to stress the first syllable in *rotapily*, which is quite strange. This can be explained in two ways. First, perhaps these subjects did not see *rotapily* as an underived noun, but possibly as a word with morphological structure, i.e. as a word that contains a suffix; *–ly* and*–ily* are common suffixes in English. Although these suffixes are not stressed in English, morphological structure can severely disrupt the stress pattern, which can cause stress to be in different places than predicted (recall the discussion on the use of underived nouns in stress analyses in Chapter 1). The fact that *rotapily* can be seen as a word containing a suffix might have caused such a large number of subjects to stress the first syllable. There are quite a lot of English words ending in –y in which main stress violates the three-syllable window (Wim Zonneveld, email correspondence): some examples are **ma**-tri-mo-ny, in-**hi**-bi-to-ry, **man**-da-to-ry etc., etc. *Rotapily* might have reminded the native speakers of such words, which therefore explains the high number of subjects that chose main stress to be outside of the regular three-syllable window. (In effect, this implies- with hindsight – that this was a less than perfect test item, which should not have appeared in the test.)

Filantomarist

When considering the results for *filantomarist,* it appears that this item shows conflicting results with only 9 subjects preferring the pre-prefinal syllable to be stressed; this clearly cannot be seen as a majority. However, when taking a closer look at the second highest scoring syllable, this turns out to be the prefinal syllable (5 subjects chose to main stress this syllable). Both options of pre-prefinal and prefinal stress are defendable by the system if again differences in pronunciation are the case: when the prefinal syllable is heavy and pronounced as [mɑ:], it becomes a rightful candidate for main stress because of WSP. If not, and simply pronounced as [mɑ], main stress follows on its neighbour, pre-prefinal syllable [tɔ], because of NONFINALITY. When the number of subjects that chose for the reasonable options of pre-prefinal and prefinal stress are added up, one can conclude that a majority of 14 subjects chose to act conforming to the system.

Misataroo

The native speakers seemed severely confused by the nonsense word *misataroo*; stress preferences turned out to be almost equally spread out over all the syllables. There seems to be a slight preference for prefinal stress, which is according to the system, but only if this syllable is heavy and pronounced with a tense vowel [tɑ:] (as seen in other examples

containing open prefinal syllables). If not, stress should be in pre-prefinal position because of NONFINALITY. However, to main stress the pre-prefinal syllable turned out to be quite unpopular: the smallest number of subjects preferred this option and, strangely, the initial and final syllables seem to be more preferred. As far as the final syllable is concerned, a well-known word such as *kan-ga-**roo*** may have served as a model. The preference for main stress on the first syllable, however, remains a mystery. As indicated above, it seems as if this particular word may simply have been too confusing for the subjects.

Cabofterisant

Depending on pronunciation, this pentasyllabic word could have stress in either prefinal or pre-prefinal position. However, in *cabofterisant*, 8 subjects placed main stress in the post-initial closed syllable [bɔf]. This is again an unexpected violation of the three-syllable window. As in the case of *rotapily* discussed above, we may assume that the subjects posited a suffix *–ant* in this word, making it morphologically complex. As indicated before, words with morphological structure can rigorously deviate from the basic stress system.

Nacasbuntera

In the test item *nacasbuntera*, the largest number of subjects (namely 8, clearly not a majority) chose to stress the pre-prefinal syllable [bɐn], which is one of the theoretically correct options: after applying NONFINALITY and assuming the prefinal syllable is pronounced light, the rightmost trochee causes stress to be in pre-prefinal position. However, stress placement always depends on the pronunciation of the prefinal syllable, as seen in previous test items. Now, from the results it emerges that the second highest number of subjects (namely 6) chose to main stress the prefinal syllable. When, instead of light, pronounced as [tɛ:] and thus as a heavy syllable, stressing the prefinal syllable follows from the system, because WSP causes heavy prefinal syllables to attract stress. When the numbers of subjects that chose either theoretically correct option of prefinal and pre-prefinal stress are added up, as seen previously in the similar case of *filantomarist*, it turns out that a majority of 14 subjects acted according to the stress system of English.

Marilicadent

The subjects seem utterly lost in determining main stress for *marilicadent*. However, when taking a closer look at what the literature predicts, the results are a little less disturbing.

Again, depending on pronunciation, this nonsense word can either have pre-prefinal stress, where the prefinal syllable is then pronounced [kɑ] (or [sɑ]), or it can have prefinal stress: when the subjects pronounced the prefinal syllable as [ke:ɪ] (or [se:ɪ]), with a diphthong, it becomes heavy and through WSP stress-attracting**.** The subjects now are equally divided over these two syllables: 6 prefer prefinal, and 6 prefer pre-prefinal stress. When adding up these numbers, this is more than half of the subjects and thus a majority, which presumes that indeed the English stress pattern is still at work. However, a striking number of 4 subjects place main stress in the extrametrical final syllable, and this cannot be explained unless we would once more assume that *–ent* reminded some subjects of a (somehow stressed) suffix.

Padolimany

The literature predicts pre-prefinal stress when this word is pronounced with a light prefinal syllable. Also in this word, however, the prefinal syllable can be pronounced as a heavy one, with a tense vowel or even a diphthong, which then allows stress in prefinal position. The actual results for this nonsense word, however, are very odd. There is no clear 'winner' among the syllables; two syllables received the same amount of votes. 6 subjects prefer prefinal stress, which is according to the system if this syllable is pronounced with a tense vowel, i.e. is pronounced heavy and so attracts stress. It would have been acceptable if the other group of 6 had main-stressed the pre-prefinal syllable, as we have seen in *marilicadent*, but this is strangely not the case: the post-initial syllable is preferred. Now, since *padolimany* is a long word ending in *–y,* it might well be the case that *padolimany* reminded the subjects of the exceptional rule that long words ending in *–y* regularly violate the three-syllable window in English (as discussed a few paragraphs earlier). This might have caused a substantial number of subjects to prefer main stress in such a seemingly odd place like the post-initial syllable.

In this chapter we have seen that the overall majority of the results from the native speakers of English conform to the theoretically described stress system of English, as developed in Chapter 1. The importance of NONFINALITY and WSP were clearly visible in these items. However, there were also a number of items that did not show a majority of subjects choosing to clearly main-stress a single, predictable, syllable. These results therefore seemed to contradict the stress system. After taking a closer look, however, it often appeared that multiple "theoretically correct" options for main stress in these items were possible due to pronunciation differences. Other seemingly diverging stress preferences could be explained

when comparing the items concerned to existing English words; this allowed appealing to exceptional sub-patterns (recall the cases of the heavy final syllable that attracts stress in bisyllabic English words, and the regular violation of the three-syllable window in long words ending in *–y*). In other cases, some test items apparently reminded subjects of words with morphological structure (especially test items ending in *–ily* or *–y*), causing main stress in unexpected positions. My overall conclusions is that, granting the deviating cases mentioned, the results of the native speaker control test come close to the theoretically described stress system of English as developed in Chapter 1.

In the following chapters we will see to what extent the second language speakers of English performed like the native speakers in their own tests.

4 THE RESULTS OF ALL L2 LEARNERS COMBINED

In this chapter we will take a look at the results of all second language learners of English combined. This is a group of 30 subjects with different L1 language backgrounds. Reiterating from Chapter 2, these language backgrounds were as follows: Sylheti Bengali (11 speakers), Dutch (3 speakers) and Afrikaans (6 speakers), Greek (4 speakers), Chinese (2 speakers) and Thai (one speaker), Czech (one speaker), Russian (one speaker) and Polish (one speaker). All L2 learners tested were 20 years of age or older, i.e. they were beyond puberty. All of them however started learning some English in primary or secondary school, thus before or during (early) puberty. The duration of their stay in an English speaking country varied from 4 months to 35 years. Despite these different backgrounds, I will first discuss the overall results to get a general impression of the major difficulties (if any!) that L2 learners of English may come across in their acquisition of the English stress pattern. Which items, or perhaps patterns, are difficult for L2 learners? In the context of the discussion, "difficult" implies that the results of the L2 learners for these items are considerably different from the native speakers' results.

The largest language groups among the L2 learners are the following: one group of 11 subjects with Sylheti Bengali as their first language, another with 9 subjects with Afrikaans or Dutch as their L1 and finally one containing 4 L1 speakers of Greek. The results for these three groups will be individually discussed in Chapters 6, 7 and 8. In these chapters, also further information regarding the stress systems (if any) of these native languages will be explained. The remaining L1 groups of subjects are clearly too small to allow any interesting conclusions on the acquisition of the English stress system; the risk of encountering idiosyncratic test behaviour not cancelled out by that of a larger number of test subjects speaking the same L1, is simply too big. These small groups consist of two speakers of Chinese, one Thai, one Polish, one Czech and one Russian L1 speaker. Given this situation, I decided to look into the overall L2 learners' results in two ways: taking the results of these smaller groups into account, and not taking them into account. To do this I have created two tables containing either all the L2 learners' results, or containing only the results of the subjects that form the biggest L1 groups among the L2 learners. The two resulting tables can be found separately on the following two pages.

Results of All L2 Learners of English

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
31. bigasta			6	**22**	2	30
32. lacar				10	**20**	30
33. rotapily		3	12	**13**	2	30
34. misataroo		4	9	7	**10**	30
35. celontara		3	10	**14**	3	30
36. cabofterisant	3	4	5	*9*	*9*	30
37. vernaytence			8	**15**	7	30
38. montanee			6	**12**	11	29
39. nesombila		3	12	**13**	2	30
40. moltorigasto	1	2	9	**16**	2	30
41. doruth				13	**17**	30
42. padolimany	3	**10**	7	7	3	30
43. perido			7	**18**	5	30
44. rafaleena		3	4	**23**	0	30
45. renay				10	**20**	30
46. morgarity		2	**15**	10	3	30
47. losifantor		4	7	**12**	7	30
48. cafilagont		6	5	5	**14**	30
49. canarontifa	4	1	**14**	11	0	30
50. lacad				11	**18**	29
51. rigadasiter	1	8	**10**	7	3	29
52. cabarant			**18**	3	9	30
53. nacasbuntera	0	5	9	**15**	1	30
54. centadi			6	**19**	5	30
55. perdentifa		2	**18**	6	4	30
56. reyno				**25**	5	30
57. codina			7	**19**	3	29
58. filantomarist	5	5	8	**9**	3	30
59. marilicadent	2	3	**10**	6	9	30
60. pertiny			**19**	6	5	30

Figure 14

Number of subjects: 30

Age range: 20-72 years

Mean age 911/30= 30 years 5 months

Lived in English environment for: 4 months - 35 years

Mean duration of stay: 8 years 8 months

4 subjects failed to address some test items – hence some totals are 29 instead of 30

Results of the Sylheti, Afrikaans/Dutch and Greek L2 Learners of English

Items	5th	4th	3rd	2nd	1st	Total
1. bigasta			4	**18**	2	24
2. lacar				8	**16**	24
3. rotapily		2	8	**12**	2	24
4. misataroo		3	**8**	6	7	24
5. celontara		3	8	**10**	3	24
6. cabofterisant	2	4	5	4	**9**	24
7. vernaytence			5	**13**	6	24
8. montanee			4	**11**	8	23
9. nesombila		2	*10*	*10*	2	24
10. moltorigasto	1	2	9	**10**	2	24
11. doruth				9	**15**	24
12. padolimany	3	**8**	5	5	3	24
13. perido			6	**14**	4	24
14. rafaleena		3	3	**18**	0	24
15. renay				8	**16**	24
16. morgarity		2	**11**	8	3	24
17. losifantor		3	6	**9**	6	24
18. cafilagont		5	4	4	**11**	24
19. canarontifa	3	0	**11**	10	0	24
20. lacad				11	**12**	23
21. rigadasiter	1	5	**8**	6	3	23
22. cabarant			**15**	2	7	24
23. nacasbuntera	0	5	8	**10**	1	24
24. centadi			5	**14**	5	24
25. perdentifa		1	**13**	6	4	24
26. reyno				**19**	5	24
27. codina			6	**15**	2	23
28. filantomarist	4	4	**7**	6	3	24
29. marilicadent	2	3	**8**	4	7	24
30. pertiny			**16**	3	5	24

Figure 15 Number of subjects: 24

Age range: 21-46

Mean age: 693/24= 28 years 11 months

Lived in English environment for: 4 months - 31 years

Mean duration of stay: 7 years 10 months

4 subjects failed to address some test items – hence some totals are 23 instead of 24

When comparing these two tables, it becomes clear that there are only minor differences between the stress preferences of both the overall L2 learners group and the group that only exists of the three larger language groups. Figure 14 contains quite some items with a number of stress preferences for a syllable differing only one vote from the number preferring another syllable in that same word. 4 of these happen to be the items that have a slight difference in stress preference between the two tables: *misataroo* is mainly preferred to have final stress in the table with all the L2 learners, but only by 10 subjects out of 30; another 9 prefer pre-prefinal stress. In Figure 15, pre-prefinal stress is dominant with 8 subjects, 7 subjects rather having the final syllable stressed. Therefore, although in this case a difference in preference seems to show among these tables, this difference is not significant. The same holds for the seemingly diverging items *nesombila* and *filantomarist*. The only slightly more pronounced difference between the two tables can be found in the item *cabofterisant*. It shows an uncertain stress preference for the final and prefinal syllable in the table for all L2 learners in Figure 14, whereas the table in Figure 15 representing the main L2 groups shows a clearer preference for stress in the final syllable. However, 9 of 24 subjects is not a very convincing result, and it appeared from the previous chapter that this item may have been just too complicated for the subjects. Therefore, also this example will not be treated as one with a significant difference.

Overall, we seem to be able to conclude that there is no significant difference between the two tables in Figure 14 and 15. Therefore, I will now continue by eliminating the 6 subjects of the 5 minor L1 language groups from the discussion, and use the results of the table in Figure 15. This table contains the results of the 24 L1 speakers of Sylheti, Afrikaans/Dutch and Greek combined. We will now take a closer look at these results and investigate whether, and how, they concur with the results of the native speakers of English.

4.1 Comparisons and difficulties

At a first glance the majority of the L2 learners' results appear to agree with the results of the native speakers. For 24 items the L2 learners overall generally preferred to put main stress on the same syllables as the native speakers. There are 6 items, however, in which the preference for main stress differed. The results for these items can be found below, together with the results of the native speakers for these same items.

L2 Learners of English Combined

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
rotapily		2	8	**12**	2	24
misataroo		3	**8**	6	7	24
montanee			4	**11**	8	23
doruth				9	**15**	24
cafilagont		5	4	4	**11**	24
marilicadent	2	3	**8**	4	7	24

Figure 16

Native Speakers of English

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
rotapily		**9**	5	5	1	20
misataroo		5	4	**6**	5	20
montanee			7	3	**10**	20
doruth				**11**	9	20
cafilagont		2	**11**	4	3	20
marilicadent	2	2	*6*	*6*	4	20

Figure 17

It is striking that 4 of these 6 items are words in which the native speaker results diverged from the predictions of the theoretically developed word stress system, as discussed in Chapter 3. These items are *rotapily, misataroo, montanee* and *marilicadent*. The other two items do show results confirming the theoretical prediction. I will discuss each of these 7 items below, commenting on them from the point of view of acquisition difficulties.

Rotapily

Differently from the native speakers, the L2 learners seem to prefer stressing the prefinal or pre-prefinal syllable. They certainly do not prefer stressing the initial syllable, as the native speakers show in their results (presumably by making a morphological analysis of this word, as pointed out earlier). It is as if they 'outperform' the native speakers by acting according to the English stress system, which contains existing words as prefinally stressed *Piccadilly*.

Misataroo

For *misataroo* the native speakers have 2 popular stress patterns, both allowed by the system. The L2 learners seem to have a slight preference for stressing the pre-prefinal syllable, which conforms to the system. This word does therefore not give insight into learning difficulties.

Montanee

Just as the native speakers, many L2 learners prefer stressing the final syllable in *montanee*. The largest number of L2 learners, however, rather stresses the prefinal syllable. This conforms to the system if this syllable is pronounced as heavy, i.e. with a tense vowel. If not, stress needs to be in pre-prefinal position. A sizable minority of the L2 learners, however, prefers main stress in pre-prefinal position. Maybe the fact that so few subjects prefer to stress the pre-prefinal syllable points towards a difficulty with the importance of the NONFINALITY constraint in English, because when NONFINALITY is not correctly applied and trochees are formed starting from the right edge, the prefinal syllable receives main stress. Of course it can still be the case that the subjects pronounced the prefinal syllable as heavy, which through the WEIGHT-TO-STRESS principle rightfully receives main stress, though it is striking that only 3 native subjects chose this option.

Doruth

In *doruth*, 15 of the 24 L2 learners main-stressed the final syllable, differently from both the native speaker results and from the Extrametricality (NONFINALITY) part of system. Maybe the preference for stressing a final, closed syllable indeed shows a difficulty with the higher ranking of NONFINALITY among the L2 learners of English. Another possibility is that the subjects are applying the pattern discussed as a "sub-rule" for native speakers: stress a heavy final syllable in bisyllabic words!

Cafilagont

For this item, 11 subjects put main stress on the final closed syllable. Now, the "sub-rule" discussed above, through which final stress becomes possible in English, holds only for bisyllabic words. The English stress system does not predict final stress either, but rather pre-prefinal or even prefinal stress (if the prefinal syllable is pronounced heavy (i.e. with a tense vowel) and thus becomes stress-attractive). The native speakers in their results for this item act according to the system by preferring main stress in the pre-prefinal syllable. The L2

learners' preference of stress on the final syllable is therefore another sign of a potential problem with NONFINALITY among some of the L2 learners.

Marilicadent

In the results for this word, the native speaker results show both pre-prefinal and prefinal stress preference. The L2 learners, however, prefer stressing either the pre-prefinal or final syllable: again, a closed final syllable receives a significant amount of votes, which points towards a problem with NONFINALITY for a certain number of L2 learners.

The aim of this chapter was to get a general impression of the major difficulties that L2 learners of English, at least those ones targeted by the current test, may have in their acquisition of the English stress system. Since a number of mother tongues were represented by just one speaker among the 30 L2 learners, I decided to continue examination with those subjects that could form a group, based on their mother tongue, of at least 4 speakers. This decision was made after comparing two tables, one containing all the 30 L2 learners' results and the other containing the results of the Bengali, Afrikaans/Dutch and Greek L2 learners of English.

From the results of the 24 L2 learners of English in Figure 15, it can be concluded that a difficulty with the application of NONFINALITY in the English stress system seems to emerge from comparing the results of the L2 learners of English in comparison with those of the native speakers: the L2 learners show more cases of final and prefinal stress. It must also be said, however, that an impressive number of items show results that are similar to the native speakers' results. To be able to say more about difficulties with the acquisition of the English stress pattern or similarities between the results of the L2 learners and the native speakers, clearly closer examination of the various mother tongues and the separate results of their speakers is required. The next chapters will deal with the results of the L2 learners per mother tongue. These are Sylheti Bengali, Afrikaans/Dutch, and Greek. The language-specific results will be compared again with the results of the native speakers to see which language groups experience which particular difficulties. Also, it will be considered per language group whether there is anything to say about the time the subjects spent in an English-speaking environment, since presumably the longer an L2 learner spends in an environment in which that L2 is the main language (and thus is necessary to be spoken in daily life by this L2 learner), the better becomes the L2 learner's unconscious understanding of that L2.

5 THE BENGALI L2 LEARNERS OF ENGLISH

5.1 Linguistic information

In her article "Keeping connected: security, place, and social capital in a 'Londoni' village in Sylhet", Katy Gardner states in a footnote that 95% of the Bangladeshis in Britain originate from Sylhet (Gardner 2008, pg. 17), which is both a city (with 316.000 inhabitants) and a district in the extreme northeast of Bangladesh (information from Wikipedia). We can therefore presume that, even though the subjects informed me in their test questionnaires that "Bangla" or "Bengali" was their mother tongue, they did not mean Standard Bangla but Sylheti, a dialect of the language spoken in Sylhet. This dialect seems to be hard to understand for speakers of other Bangla varieties (see below). Because of this, I could not rely on stress literature about Bangla, but I needed information about Sylheti specifically which turned out to be hard to find. It was the translator couple Sue and James Lloyd-Williams (located in Sylhet) who gave me more information about stress and pitch in Sylheti via email, and also sent me the only article on Sylheti phonology available. This article "Sylheti Phonology" by David and Nancy Spratt (1985) was never published, but seems to be often quoted. This is their description:

> So far as spoken language is concerned, there is strong testimony to the unique characteristics of Syheti speech. Thus the Census comments [. . .] "The people of Sylhet are very fond of their dialect. They hardly use any language other than their own dialect for a conversation with people of their own district, wherever they may be and whatever be their own cultural and educational attainments." The Gazateer [. . .] states that much of the speech form is hardly intelligible to the people of other districts. (Spratt 1985, pg. 1-2).

This Spratt and Spratt article mentions that "material on stress and intonation is still somewhat tentative" (pg. 2), and even their study leaves open questions "particularly in the area of stress tone and intonation" (pg 18). Spratt and Spratt report a two-way pitch contrast that may prove to be handled better as a word stress feature (pg. 13), but they notice especially pitch differences rather than stress. From a personal email exchange with James Lloyd-Williams, it became clear that "pitch and not stress is the most important feature in the language. Within a sentence, words generally have high pitch on the final syllable, except at the end of a sentence when they have low pitch" (Lloyd-Williams, 2010). Stress plays a role,

but it is a small one; more research on this subject is needed to be able to explain the exact role of stress and pitch within Sylheti Bengali. Still, it is interesting to keep in mind how high pitch seems to be mainly on the final syllable of a Sylheti word, when discussing the Sylheti L2 learners' results.

5.2 Test result analysis

The following are the overall test results for the 11 Sylheti Bengali L2 learners of English.

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
1. bigasta			1	**8**	2	11
2. lacar				2	**9**	11
3. rotapily		0	2	**9**	0	11
4. misataroo		1	3	**4**	3	11
5. celontara		1	3	**4**	3	11
6. cabofterisant	1	2	1	2	**5**	11
7. vernaytence			0	5	**6**	11
8. montanee			0	**9**	1	10
9. nesombila		1	*4*	*4*	2	11
10. moltorigasto	0	2	**6**	1	2	11
11. doruth				1	**10**	11
12. padolimany	1	**4**	1	2	3	11
13. perido			2	**5**	4	11
14. rafaleena		2	3	**6**	0	11
15. renay				3	**8**	11
16. morgarity		1	3	**5**	2	11
17. losifantor		2	3	2	**4**	11
18. cafilagont		2	1	2	**6**	11
19. canarontifa	2	0	**5**	4	0	11
20. lacad				*5*	*5*	10
21. rigadasiter	1	2	*3*	2	*3*	11
22. cabarant			4	2	**5**	11
23. nacasbuntera	0	3	**4**	3	1	11
24. centadi			1	**7**	3	11
25. perdentifa		0	**5**	2	4	11
26. reyno				**8**	3	11
27. codina			3	**5**	2	10
28. filantomarist	1	1	**4**	2	3	11

29. marilicadent	1	2	2	2	**4**	11
30. pertiny			*4*	3	*4*	11

Figure 18 Number of subjects: 11
Age range: 21-40
Mean age: 287/11= 26 years 1 month
Lived in English environment for: 4 months - 30 years
Mean duration of stay: 5 years 7 months
3 subjects forgot different test items – hence some total numbers are 10 instead of 11

Figure 18 states that the average time a subject lived in an English-speaking country is 5 years and 7 months. What must be said however is that from the 11 subjects, 5 spent less than a year in an English-speaking environment while one subject spent most of her life (30 years) in Britain. A majority of the subjects therefore spent a notably shorter time in an English-speaking country than the average time calculated in Figure 18. This could be kept in mind when discussing the results.

What immediately draws attention in the results in Figure 18 is the large number of items that receive final stress. In the 30 test items, 13 results were remarkably different from the native speakers' results. The 11 Sylheti L2 learners showed a preference for final stress different from the native speakers' results in 7 test items, and for another 3 items the final syllable was as much preferred as another syllable in that same item. Another 4 items showed a preference for stress on a syllable different from the one preferred by the native speakers. An overview of these items with discussion can be found below.

Sylheti Bengali L2 Learners of English

	Stress preference on syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
rotapily		0	2	**9**	0	11
cabofterisant	1	2	1	2	**5**	11
vernaytence			0	5	**6**	11
montanee			0	**9**	1	10
moltorigasto	0	2	**6**	1	2	11
doruth				1	**10**	11
morgarity		1	3	**5**	2	11
losifantor		2	3	2	**4**	11
cafilagont		2	1	2	**6**	11

lacad				*5*	*5*	10
rigadasiter	1	2	*3*	2	*3*	11
cabarant			4	2	**5**	11
marilicadent	1	2	2	2	**4**	11
pertiny			*4*	3	*4*	11

Figure 19

Native Speakers of English

	Stress preference on syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
rotapily		**9**	5	5	1	20
cabofterisant	0	**8**	7	4	1	20
vernaytence			5	**12**	3	20
montanee			7	3	**10**	20
moltorigasto	3	1	1	**15**	0	20
doruth				**11**	9	20
morgarity		3	**13**	3	1	20
losifantor		1	2	**15**	2	20
cafilagont		2	**11**	4	3	20
lacad				7	**13**	20
rigadasiter	0	4	**12**	3	1	20
cabarant			**14**	1	5	20
marilicadent	2	2	*6*	*6*	4	20
pertiny			**13**	7	0	20

Figure 20

Cabofterisant, vernaytence, doruth, losifantor, cafilagont, cabarant, marilicadent

Striking in the table in Figure 19 is that it contains nearly every item from the test ending in a heavy, closed syllable. (In addition, *pertiny* is a final stress candidate. More about the results for this word can be found below.) For all these items, the Sylheti L2 learners prefer this final closed syllable to be main stressed. As discussed in the first paragraphs of this Chapter, speakers of Sylheti are assumed to have a high pitch in the final syllable of a word. In the items ending in heavy closed syllables, this Sylheti pattern seems to emerge. In addition to the L1 influence of final stress (but recall the proviso of a serious lack of availability of reliable information), these results also show a sensitivity for heavy syllables, and thus to a certain higher ranking of WSP and a lower ranking of NONFINALITY, which may or may not be the result of some sort of transfer from L1. The correct ranking of these constraints in the L2

grammar still seems far away.

Lacad, rigadasiter, pertiny

Among the test results there are also some cases in which no clear preference for main stress in a word emerges. This can be seen above in the examples *lacad, rigadasiter* and *pertiny.* In *lacad*, the subjects are evenly divided over both syllables; half of them stressed the first syllable, while another five put main stress on the final syllable. In *rigadasiter*, the results are again spread out especially over the first four syllables from the right. There is a small indication that main stress is preferred to be on either the final or the pre-prefinal syllable. Finally, *pertiny* is the strangest item in the list, for it does not contain a final, heavy syllable at all but even so the number of subjects that chose final stress is as large as the number preferring initial stress. It must also be noticed that the middle syllable received a relevant number of votes; only one fewer than the other two syllables. The only information that can be derived from these cases is that the English notions of NONFINALITY and WSP do not seem to have found the right position in the grammar of most of the subjects.

Rotapily, morgarity, montanee

In the nonsense words *rotapily, morgarity* and *montanee*, the Sylheti subjects prefer stress to be on the prefinal syllable. The English stress system in these cases predicts pre-prefinal stress. (The system predicts this when the prefinal syllable is pronounced light; if the prefinal syllable is pronounced heavy, i.e. with a tense vowel or a diphthongized vowel, which is theoretically possible, the system would predict prefinal stress.) However, in the native speaker results *rotapily* preferentially received initial stress, and for *montanee* a majority of native speakers main-stressed the final syllable, both results seemingly contradicting the system (recall the discussion on these results in Chapter 3). The Sylheti L2 learners consistently chose prefinal stress. Since we hardly know anything about the stress or pitch system in Sylheti, an explanation based on L1 influence would be hard to give.

Moltorigasto

Since [gɑs] in *moltorigasto* is a closed syllable, there can be no mistake in that it is heavy in pronunciation. A prefinal heavy syllable causes prefinal stress in English. However, the Sylheti L2 learners of English prefer to stress the pre-prefinal syllable in this word, which is odd from any point of view. Other items in Figure 18 with a prefinal heavy syllable, like

rafaleena and *bigasta*, show better results in comparison with the English stress system. The preferred pre-prefinal stressing of this particular item therefore remains a bit of a mystery.

From the results of the Sylheti Bengali L2 learners of English it can at least be stated that some sensitivity to weight in a final heavy syllable seems to emerge. Furthermore, the subjects tend to generally prefer stress to be in a prefinal or final syllable more often than the native speakers of English do. From the only article available on Sylheti phonology, it emerged that in Sylheti at word level pitch usually occurs in the final syllable. This hints towards a certain influence of the L1 in the Sylheti Bengali test results. However, since there is so little to say on the stress or pitch system in Sylheti, and because currently unexplainable test results came to light, conclusions on L1 influence can only be drawn after more phonological research to Sylheti pitch and accent.

We seem to be able to conclude, however, based on the results of the Sylheti Bengali L2 learners that there appears to be a certain difficulty with the ranking of NONFINALITY and WSP in the grammar of most of the subjects. Speculating, their relatively short (in this thesis at least!) stay in an English-speaking country might have been of influence on the large number (namely 14) of deviating results compared to those of the native speakers; the subjects might have spent too little time in an English environment to be able to unconsciously acquire the stress system of English.

6 THE AFRIKAANS AND DUTCH L2 LEARNERS OF ENGLISH

6.1 Linguistic information

Since Afrikaans and Dutch have the same word stress system, as explained by Zonneveld in his article "Optimality Theory: Roots and Aims" (1996), the 9 subjects that speak Afrikaans or Dutch as their first language can be put together in one group. In his handout, Zonneveld shows that stress in these languages follows almost the same pattern as in English; Afrikaans and Dutch are right-edge trochaic languages. Also just as English, Afrikaans and Dutch are sensitive to weight: The WEIGHT-TO-STRESS constraint plays a significant role. Also NONFINALITY is important.

However, these two constraints are part of a slightly different ranking from English regarding the constraint hierarchy for word stress in Afrikaans and Dutch; NONFINALITY is ranked lower in the Afrikaans and Dutch hierarchy, contrary to the hierarchy of English as discussed in Chapter 1 where NONFINALITY is ranked higher (right below WSP). This results in the fact that not all final syllables in Afrikaans and Dutch are extrametrical. In "rules", what happens because of this lower ranking of NONFINALITY can be explained as follows: only syllables that end in –VC (short vowel followed by a consonant) are extrametrical. Other syllables are simply relevant to stress, differently from English, in which all final syllables are extrametrical. As a result of this, the most significant difference between English on the one hand and Afrikaans and Dutch on the other, is the regular occurrence of final stress.

Especially the so-called superheavy syllables (i.e., syllables that end in long vowel-consonant –VVC or vowel-consonant-consonant –VCC) attract stress because they are closed and heavy. These syllables get main stress because they are not extrametrical and so they are always the rightmost syllable in the word.

Furthermore, regarding WSP, there is a crucial difference with English when it comes to what exactly is a heavy syllable. In Dutch and Afrikaans, heavy syllables are all closed syllables (simply all those ending in –C). These are the syllables that receive an extra grid mark at level 2 of the grid; they attract stress (recall discussion in Chapter 1). All open syllables, i.e. those ending in –V, are light. This is a crucial difference with English, in which syllables are also

heavy if they contain a tense vowel. This is not the case in Afrikaans and Dutch; in these languages such syllables are considered light, and only closed syllables are considered heavy.

To give some impression of how stress works in Afrikaans and Dutch, consider below one Dutch example using an OT tableau. This example is the word *president*, which is similar in English but has stress in a different position in Dutch, which shows the effect of a lower ranked NONFINALITY in Afrikaans and Dutch.

Dutch/Afrikaans tableau for /president/

/president/	FTBIN	TROCHEE	WSP	ALIGN-R	PARSE	NONFINALITY
[(pré.si).dent]			*!	*	*	
[pre.(sí.dent)]			*!		*	*
☞ [(prè.si).(dént)]						*
[pre.si.(dént)]					*!*	*

Figure 21

What immediately strikes from Figure 21 is that FTBIN shows no violation mark for the final two candidates [(prè.si).(dént)] and [pre.si.(dént)], although the rightmost foot (dent) of both candidates appears to exist of one syllable and not of two. This is because, according to Zonneveld (1993), Nouveau (1994) and Zonneveld and Nouveau (2004), superheavy syllables (i.e. ending in –VVC or –VCC, explained earlier) are bisyllabic. This works as follows. By regarding the final consonant of such a superheavy syllable as the onset of a 'new' syllable, containing a so-called "unspecified vowel" V, a final syllable such as *–dent* then theoretically turns into two syllables: –den–tV. In this way, stress in a final superheavy syllable really becomes "regular" prefinal stress in a word ending in a light, open syllable. This can be compared to a word like *a-gen-da*: in this word, [n] is the coda of the prefinal heavy syllable, while [d] is the onset of the final light syllable. This is how superheavy final syllables become pure binary feet (Zonneveld, 1993, Nouveau, 1994, Zonneveld and Nouveau, 2004).

Because the constraint NONFINALITY is ranked quite lowly in this hierarchy seen in Figure 21, the optimal candidate for /president/ in Afrikaans and Dutch has main stress on its final output syllable. As shown in Chapter 1, the English constraint hierarchy for word stress causes main stress to be in the first syllable of the same word /president/, because the high ranking of NONFINALITY prevents final syllables from being footed. Since NONFINALITY is ranked lower

in Dutch and Afrikaans, final stress becomes possible, because after the elimination of all other candidates by WSP and PARSE there is no other option left.

6.2 Test result analysis

The following table shows the overall test results for the 9 Afrikaans and Dutch L2 learners of English. Of these 9 subjects, 3 were Dutch and 6 were Afrikaans.

	Stress preference in syllable:					
Items	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Total**
1. bigasta			3	**6**	0	9
2. lacar				4	**5**	9
3. rotapily		2	*3*	*3*	1	9
4. misataroo		2	**4**	0	3	9
5. celontara		2	**5**	2	0	9
6. cabofterisant	0	2	2	1	**4**	9
7. vernaytence			3	**6**	0	9
8. montanee			3	1	**5**	9
9. nesombila		1	*4*	*4*	0	9
10. moltorigasto	0	0	1	**8**	0	9
11. doruth				4	**5**	9
12. padolimany	1	1	**4**	3	0	9
13. perido			1	**8**	0	9
14. rafaleena		1	0	**8**	0	9
15. renay				3	**6**	9
16. morgarity		1	**5**	3	0	9
17. losifantor		1	2	**4**	2	9
18. cafilagont		2	2	0	**5**	9
19. canarontifa	1	0	3	**5**	0	9
20. lacad				3	**6**	9
21. rigadasiter	0	*3*	2	*3*	0	8
22. cabarant			**8**	0	1	9
23. nacasbuntera	0	1	*4*	*4*	0	9
24. centadi			1	**6**	2	9
25. perdentifa		1	*4*	*4*	0	9
26. reyno				**7**	2	9
27. codina			2	**7**	0	9
28. filantomarist	2	2	**3**	2	0	9
29. marilicadent	0	1	**4**	2	2	9

30. pertiny			**8**	0	1	9

Figure 22 Number of subjects: 9 (3 Dutch, 6 Afrikaans)
Age range: 27-46
Mean age: 309/9= 34 years 4 months
Lived in English environment for: 4 years - 31 years
Mean duration of stay: 12 years 1 month
One subject forgot a test item – hence one total number is 8 instead of 9

When looking at the test results for Afrikaans and Dutch second language learners of English, it immediately becomes clear that the results of many test items closely resemble those of the native of speakers. Also, their average time spent in an English-speaking environment is (in this thesis) relatively long: 12 years and 1 month. Conjecturing, this might mean that these subjects might have unconsciously acquired the stress pattern of English to a greater extent than the Bengali subjects discussed in the previous chapter.

As shown in Figure 22, from the 30 items only 10 are different from the native speakers' results to a variety of degrees. These items are shown in Figure 26 and discussed below. The results of the native speakers for these same items can be found in Figure 27.

Afrikaans/Dutch L2 Learners of English

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
rotapily		2	*3*	*3*	1	9
misataroo		2	**4**	0	3	9
celontara		2	**5**	2	0	9
cabofterisant	0	2	2	1	**4**	9
doruth				4	**5**	9
padolimany	1	1	**4**	3	0	9
cafilagont		2	2	0	**5**	9
canarontifa	1	0	3	**5**	0	9
rigadasiter	0	*3*	2	*3*	0	8
perdentifa		1	*4*	*4*	0	9

Figure 23

Native Speakers of English

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**

rotapily		**9**	5	5	1	20
misataroo		5	4	**6**	5	20
celontara		4	4	**11**	1	20
cabofterisant	0	**8**	7	4	1	20
doruth				**11**	9	20
padolimany	2	*6*	4	*6*	2	20
cafilagont		2	**11**	4	3	20
canarontifa	2	1	**10**	6	1	20
rigadasiter	0	4	**12**	3	1	20
perdentifa		3	**12**	5	0	20

Figure 24

Rotapily

In the nonsense word *rotapily*, the L2 learners seem to prefer prefinal or pre-prefinal stress, whereas the native speakers prefer initial stress. This contrast is remarkable, especially when regarding the fact that the English stress system predicts the result that the L2 learners show. As discussed in Chapter 3, depending on the nature of the prefinal syllable (which can be heavy or light in pronunciation), pre-prefinal and prefinal stress in this item can occur in English. Now, the Afrikaans and Dutch stress system predicts prefinal stress. The L2 learners either seem to prefer a mix between their own stress pattern (which predicts prefinal stress) and one predicted possibility of the English stress pattern (which is pre-prefinal stress), or they act entirely according to the English stress system. Therefore, although the contrast with the native speakers' result may seem to hint towards L1 influence, this is in fact no more than a hint as the actual difference is not very systematic.

Misataroo

In the result for *misataroo,* the L2 learners preferably stress the pre-prefinal syllable. The syllable preferred by the second highest number of subjects is the final syllable; one explanation is the potential influence of the spelling symbol *–oo*: words like *shampoo* and *kangaroo* also have final stress. The native speakers' results for *misataroo* are all over the place with a slight preference for the prefinal syllable, which is unexpected but explainable if the prefinal syllable is pronounced with a tense vowel.

Celontara

For this item the L2 learners have a clear preference for stressing the heavy, pre-prefinal syllable [lɔn]. The native speakers, however, contemplate the possibility of two heavy syllables in this word, namely [lɔn] but also prefinal syllable [tɑ:] which when pronounced with a tense vowel is heavy in English and therefore attracts stress. Only 2 Afrikaans/Dutch subjects put stress on this prefinal syllable, whereas 5 rather stressed pre-prefinal syllable [lɔn]. To stress [lɔn] does not conform to the stress pattern of Afrikaans and Dutch; this pattern predicts prefinal stress. This result therefore might show some understanding of how stress works in English.

Cabofterisant

This word ends in a superheavy closed syllable. In Afrikaans/Dutch, such final syllables always receive main stress, because they are heavy and not extrametrical (a final superheavy syllable functions as a binary foot, and stress in such a syllable can thus be regarded as prefinal stress, as explained earlier). The results show that the L2 learners indeed prefer this final syllable to be main stressed, even though this word was presented to them as a new English word. Hence we see the influence of the mother tongue in these results.

Doruth

In this word, the L2 learners are nearly equally divided with a slight preference for main stress on the final syllable. The native speakers show a similar result but with a slight preference for the regular English system: the majority main stressed the first (prefinal) syllable. To a small majority of the Afrikaans/Dutch L2 learners, given the visual presentation of the test the final syllable might have looked like ending in –VVC, which would demand main stress and could therefore explain their choice.

Padolimany

As discussed in Chapter 3, the native speakers used a large range of options in choosing main stress for this test item. The L2 speakers seem to have a preference to main stress the pre-prefinal or else the prefinal syllable. The pre-prefinal stress preference would be according to the English stress pattern (again, if the prefinal syllable [mɑ] is pronounced light. If pronounced [mɑ:], this heavy syllable rightfully attracts stress). The Afrikaans/Dutch stress system predicts prefinal stress. Since the majority of subjects chose pre-prefinal stress however, they seem to outperform the native speakers of English, but this does not have to be

the case. Since long words ending in *–y* often violate the three-syllable window in English (recall the discussion on this item in Chapter 3) and the native speakers seem to be (presumably unconsciously, but still) aware of this, stress in the native speakers' results occurs in a rather strange position (there was a slight preference for the post-initial syllable). Apparently, the L2 learners are not aware of this type of exception to the system, which seems a plausible explanation for their (theoretically correct!) preferences.

Cafilagont

In the results for this nonsense word the same thing seems to happen as seen in the results for *cabofterisant*. A final syllable ending in –VCC attracts main stress in Afrikaans and Dutch, and this is exactly what 5 Afrikaans/Dutch L2 learners showed in their results. In comparison, the native speakers' stress system led them to stress the pre-prefinal syllable.

Canarontifa

Also in this test item, the results of the L2 learners conform to the predictions of their native stress system. The L2 learners prefer the prefinal syllable to be stressed, whereas the native speakers prefer main stress on the pre-prefinal syllable, an option also allowed by the English stress system.

Rigadasiter

The Afrikaans/Dutch L2 learners show ambiguous results in this test word, whereas the native speakers clearly preferred the pre-prefinal syllable to be main-stressed. This syllable receives only 2 votes from the L2 learners, who seem to prefer either the prefinal or post-initial syllable. Pre-prefinal stress is what the Afrikaans/Dutch system predicts. So, the post-initial stress preference remains unclear. Fact is that the L2 learners' results for this word considerably differ from the native speaker results.

Perdentifa

The L2 learners' results for *perdentifa* show an equal preference for either the prefinal or pre-prefinal syllable. Prefinal stress is what the Afrikaans/Dutch stress system demands. Pre-prefinal stress is predicted according to the English stress system, unless the prefinal syllable is pronounced with a tense vowel and therefore heavy and stress-attracting in English. A large majority of native speakers put main stress on the pre-prefinal syllable. The L2 learners of English seem to show some influence of their mother tongue in their results.

Even though the results for the items above show some possible influence of the stress patterns of the L2 learners' mother tongues, the results for the majority of test items can be considered similar to the results of the native speakers of English. In these items, by main-stressing the correct syllable, the subjects can be said to show competence in the English stress system. In asserting this it should be noted that it is not the case that in these correct items the predictions of both the Afrikaans/Dutch stress system and the English stress system were the same, which would then cause the subjects to always choose the right syllable. We can see this in words like *cabarant* for example, for which the Afrikaans/Dutch stress system predicts final stress but the English system demands pre-prefinal stress. The Afrikaans/Dutch subjects nearly unanimously chose to main-stress the initial syllable, conforming to the English stress pattern. Among the test items more examples like this can be found. When speculating, a positive influence on these quite impressive results might have been the relatively long period of time the Afrikaans and Dutch subjects spent in an English-speaking country. Still, in some items a struggle with the right ranking of NONFINALITY can be observed, causing main stress to be placed on final and prefinal syllables.

7 THE GREEK L2 LEARNERS OF ENGLISH

7.1 Linguistic information

According to Protopapas (2006), word stress plays a very important role in Modern Greek; it contributes to lexical identity. Two words can be minimal pairs by having only a difference in stress placement. Examples are (Drachman and Malikouti-Drachman 1999): *o-**po**-te* "whenever", ***po**-te* "when", and *po-**te*** "never". There is no clear single pattern distinguishable in Greek, but the language seems to observe a three-syllable window. The WEIGHT-TO-STRESS constraint does not seem to play a significant role. (When suffixes or clitics attach to a word, a second stress can emerge to prevent this three-syllable-rule from being violated (Protopapas, 2006).)

7.2 Test result analysis

Below are the overall test results for the 4 Greek second language learners of English.

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
1. bigasta			0	**4**	0	4
2. lacar				*2*	*2*	4
3. rotapily		0	**3**	0	1	4
4. misataroo		0	1	**2**	1	4
5. celontara		0	0	**4**	0	4
6. cabofterisant	1	0	**2**	1	0	4
7. vernaytence			*2*	*2*	0	4
8. montanee			1	1	**2**	4
9. nesombila		0	*2*	*2*	0	4
10. moltorigasto	1	0	**2**	1	0	4
11. doruth				**4**	0	4
12. padolimany	1	**3**	0	0	0	4
13. perido			**3**	1	0	4
14. rafaleena		0	0	**4**	0	4
15. renay				*2*	*2*	4
16. morgarity		0	**3**	0	1	4
17. losifantor		0	1	**3**	0	4
18. cafilagont		1	1	**2**	0	4

19. canarontifa	0	0	**3**	1	0	4
20. lacad				**3**	1	4
21. rigadasiter	0	0	**3**	1	0	4
22. cabarant			**3**	0	1	4
23. nacasbuntera	0	1	0	**3**	0	4
24. centadi			**3**	1	0	4
25. perdentifa		0	**4**	0	0	4
26. reyno				**4**	0	4
27. codina			1	**3**	0	4
28. filantomarist	1	1	0	**2**	0	4
29. marilicadent	1	0	**2**	0	1	4
30. pertiny			**4**	0	0	4

Figure 25 Number of subjects: 4
Age range: 21-30
Mean age: 97/4= 24.3 years of age
Lived in English environment for: 3 years - 8 years
Mean duration of stay: 4 years 3 months

Of course, with only 4 subjects it is hard to distinguish a true preference pattern for the individual test items. With this proviso, I will still base my discussion assuming that a "majority pattern" implies a preference for a syllable that receives 2 or more votes. From these results we can see that 20 items to different degrees showed the same stress preferences compared to the results of the native speakers of English. Strikingly, these preferences always target a prefinal or pre-prefinal syllable. In 10 items, either a different or an unclear preference emerges. These items are shown and discussed below. Again, below this table the native speakers' results for the same items are shown.

Greek L2 Learners of English

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
lacar				*2*	*2*	4
rotapily		0	**3**	0	1	4
moltorigasto	1	0	**2**	1	0	4
perido			**3**	1	0	4
renay				*2*	*2*	4
cafilagont		1	1	**2**	0	4
lacad				**3**	1	4

nacasbuntera	0	1	0	**3**	0	4
centadi			**3**	1	0	4
filantomarist	1	1	0	**2**	0	4

Figure 26

Native Speakers of English

	Stress preference in syllable:					
Items	**5th**	**4th**	**3rd**	**2nd**	**1st**	**Total**
lacar				7	**13**	20
rotapily		**9**	5	5	1	20
moltorigasto	3	1	1	**15**	0	20
perido			7	**11**	2	20
renay				9	**11**	20
cafilagont		2	**11**	4	3	20
lacad				7	**13**	20
nacasbuntera	2	4	**8**	6	0	20
centadi			8	**10**	2	20
filantomarist	1	3	**9**	5	2	20

Figure 27

Lacar, lacad, renay

The Greek L2 learners generally make different choices compared to the native speakers in the bisyllabic items *lacar, lacad* and *renay*. They either do not show a clear preference, as in *lacar* and *renay*, or they prefer the initial syllable as in *lacad*. The native speakers prefer to main stress the final syllable in all these items. As discussed in Chapter 1 and 3, contrary to the English stress system, final heavy syllables in in bisyllabic words in English attract stress. From the Greek L2 learners' results for *lacad, lacar* and *renay* it appears that the L2 learners are not yet aware of this exceptional rule (but – as a result – stress these words as predicted by the system).

Rotapily

3 out of 4 subjects prefer the pre-prefinal syllable [tɑ] to be stressed. This is correct according to the English stress system and is allowed by the Greek three-syllable window. However, it contradicts the native speakers' result, which shows a post-initial stress preference. Again, an exception in English (namely the fact that long words ending in *–y* regularly violate the three-

syllable window in English, recall the discussion in Chapter 3) does not seem to be acquired yet by the L2 learners.

Moltorigasto

Two L2 learners prefer stress on the pre-prefinal syllable in *moltorigasto*. A third subject stresses the prefinal syllable, and a fourth selects the initial syllable. The native speakers show a preference for prefinal stress. This is what the English stress pattern predicts as well. It remains a mystery why the L2 learners prefer the pre-prefinal syllable to be main-stressed, since there is no clear pattern distinguishable in Greek. Remarkable in any case is the fact that the Greek L2 learners do not seem sensitive to the heavy prefinal syllable in this item.

Perido, centadi

3 out of the 4 Greek L2 learners prefer stressing the initial (or pre-prefinal) syllable in *perido* and *centadi*. A majority of the native speakers show a preference for pre-prefinal stress as well, even though prefinal stress in these two words is possible as well (when the vowels in these syllables are pronounced tense, these heavy syllables attract stress). These results of the L2 learners therefore do not show any difficulties with the English stress pattern, and even reveal some understanding of it.

Cafilagont, nacasbuntera, filantomarist

In these words, the Greek L2 learners seem to prefer to stress the prefinal syllable. Again, nothing seems to indicate a possible sensitivity to heavy syllables (unless in their pronunciation the prefinal syllables have a tense vowel). The Greek subjects' stress preferences in general, however, seem to follow a certain pattern, given the fact that only a prefinal or pre-prefinal syllable received stress in each nonsense word. The native speakers generally main-stressed the pre-prefinal syllable, following the English stress system (see for this the explanations in Chapters 1 and 3).

As pointed out above, for 20 items the Greek L2 learners' results are quite similar compared to those of the native speakers of English. This must show some unconscious awareness of the English stress pattern, even though these subjects have lived in an English-speaking country for a relatively short period of time (namely 4 years and 3 months, as can be seen in Figure 25), since the unpredictability of Greek stress does not allow us to make solid predictions of the Greek L2 learners' behaviour in choosing stress in the test items. The similarity in the

Greek L2 learners' results compared to the native speaker results for all these 20 items cannot simply be a coincidental effect of the same stress predictions for these items in English and Greek. On the other hand, the 10 deviating items discussed above do not seem to show a clear sensitivity to heavy syllables, which is quite an important feature of the stress pattern of English. The fact, however, that only a prefinal or pre-prefinal syllable received stress in each nonsense word shows how NONFINALITY must play an important role in the (developing) grammars of the Greek subjects. Interestingly, the 10 words that showed results differing from the native speakers are partly also the words in which the native speakers showed ambiguous results. It could therefore well be that these test items themselves provoked confusion.

8 CONCLUSIONS

In this thesis, the main research question was: to what extent have the tested second language learners of English acquired the stress pattern of English, as explained in theory and shown by the results of the native speakers of English?

From the research done to answer this question and described in Chapters 3 to 7, we can conclude the following.

First, with only marginal exceptions the native speakers of English in their test results acted according to the theoretical description of the stress system of English. Test items that did not seem to show results that conform to this system appeared to follow special patterns. The results for the nonsense words *lacar, lacad* and *renay* supported the assumption that in English, heavy final syllables in bisyllabic words attract stress (Zonneveld, 1976). The results for *rotapily* and *padolimany* confirmed that long words ending in *–y* in English often violate the three-syllable window. Other deviating results were seen in items that may have appeared to have some morphological structure. These items ended in *–ily*, *–y, –ant* or *–ent,* which are conventional suffixes in English. Morphological structure in a word can severely affect the stress system, causing stress to be in unexpected positions. A single item (*misataroo*) might have plainly been too confusing to the subjects. With hindsight, these words were no ideal test items and should have been redesigned or left out of the test.

Second, after deciding that 6 subjects that formed minor language groups among the L2 learners could be left out of the discussion, the overall results of the L2 learners of English suggested that the ranking of NONFINALITY might be a problem: in a number of items, unpredicted final stress seemed to be preferred by the majority of subjects. In another few items prefinal stress was preferred although this prefinal syllable did not appear to be regarded heavy by the native speakers (since a general preference for prefinal stress in the native speakers' results did not show in these items, and stress in this position only occurs in English when the prefinal syllable is heavy).

Third, the Sylheti Bengali L2 learners of English showed a significant preference for main stressing closed final syllables, clearly contradicting the English high ranking of NONFINALITY. This could be attributed to L1 influence, though this is difficult to say in the absence of detailed information on stress or pitch accent in Sylheti. The only (unpublished) article available states that at word level, a pitch accent generally occurs in the final syllable. It could also be attributed to the fact that the Bengali L2 learners of English spent a relatively short period of time in an English-speaking environment. This might have given them too little opportunity to acquire unconscious information about the high ranking of NONFINALITY in English. What the results do show, however, is a clear sensitivity to heavy syllables and a frequent preference for final stress by these Bengali subjects. Thus, a combination of difficulties with the ranking of NONFINALITY and a (surprising?) awareness of the importance of the WEIGHT-TO-STRESS principle seems to emerge from the Bengali results.

Fourth, the Afrikaans and Dutch L2 learners of English in their results show that the English relatively high ranking of NONFINALITY is still slightly difficult for them. Although the majority (20!) of the 30 test items showed results corresponding to the native speakers' results, some items are clearly affected by the L1 stress system. This system does not differ greatly from the English one, but it has some crucial differences in the ranking of NONFINALITY and the treatment of superheavy final syllables by FTBIN. Especially the lower ranking of NONFINALITY typical for Afrikaans and Dutch emerged from the results of these L2 learners. However, the Afrikaans and Dutch subjects perform notably better in their results than the Bengali and the Greek L2 learners of English. I will speculate on some probable cause of this finding below.

Fifth, the results of the Modern Greek L2 learners of English strikingly show stress preferences for the prefinal and pre-prefinal syllables. As explained, Greek word stress is idiosyncratic but it must occur on one of the three final syllables of a word. In OT terms, this implies a grammar that heavily relies on exceptionality markings and stress faithfulness. Given this, it is remarkable that no test word received a preference for final stress. Even though the Greek subjects spent a relatively short time in an English-speaking environment and the language spoken at their home was Greek, this result must point towards a certain high ranking of NONFINALITY in their developing grammars for English. Although the majority of items compared favourably to the native speaker results, the deviating results showed a lack of full understanding of the high ranking of WSP in the English grammar.

Sixth, in the L2 learners' results that clearly deviated from the native speakers' results, some items reoccurred in two or all three language groups. These test words are *rotapily, cabofterisant, doruth, cafilagont, lacad* and *rigadasiter.* At the same time, however, for most of these items the native speakers as a control group showed deviating results, too (as explained in Chapter 3); this seemed to follow especially from native speaker competence in exceptional English patterns. The L2 learners generally did not appear to be aware of these additional rules.

Overall, it can be concluded that from the results of these L2 learners of English a significant part of the test items showed either preference for stress in positions that could not directly be explained (due to the lack of theoretical background of Sylheti Bengali pitch and accent, or to the unpredictable stress patterns of Greek), or they showed preference for stress in positions that hint at some influence of the mother tongue (as seen in some results for Afrikaans and Dutch). From the 30 items, the Afrikaans/Dutch and Greek L2 learner groups both showed considerably different results compared to the native speakers in 10 test items, while the Sylheti Bengali L2 learners showed this in 14 items.

The Sylheti Bengali subjects seemed to experience the largest difficulty with the position of NONFINALITY in the English grammar, and their results showed a remarkable sensitivity to syllable quantity. The Afrikaans and Dutch subjects showed a struggle with NONFINALITY as well, but they performed better than the Sylheti Bengali in the sense that final stress did not occur as often as in the Bengali results. The Greek subjects seemed to have a difficulty with the WEIGHT-TO-STRESS constraint; their results seemed to lack sensitivity to syllable quantity entirely, which may be interpreted as resulting from their own first language. Strikingly, they appeared to be very aware of NONFINALITY: in their test results, main stress never occurred on the final syllable. In their L1, final main stress is just one possible lexical pattern, so not a very strong one (as differently from Afrikaans/Dutch). Having discovered the importance of NONFINALITY therefore seems to be a case of L2 learning, at least for this aspect.

In general it can be concluded that of the main language groups discussed in Chapters 5 to 7, the Afrikaans and Dutch subjects (Chapter 6) performed slightly better than the Bengali (Chapter 5) and Greek subjects (Chapter 7), since they showed a sensitivity to syllable quantity and they showed awareness of a higher ranking of NONFINALITY in the L2 grammar,

in the results for more items than the Bengali and Greek subjects did. Speculating, this difference between these three language groups can be attributed to at least the following factors.

First, there is the factor of the length of time the learners spent in their L2 environment. Judging from the information provided by the subjects in their questionnaires (and depicted in Figures 18, 22 and 25), on average, the Afrikaans and Dutch subjects spent a considerably longer time in an English-speaking country than the other L2 learners, namely 12 years and 1 month. The Bengali L2 learners spent an average time of 5 years and 8 months in an English environment, and the Greek learners 4 years and 3 months. Second, another important difference between the language groups that might have played a role is the fact that the Afrikaans and Dutch stress systems are considerably more similar to the English stress system than the systems of the other two languages: Sylheti Bengali turned out to be a language in which pitch probably plays a more important role than word stress, and in Greek word stress has a highly idiosyncratic quality. Taking these findings into account, regarding overall L2 acquisition, this thesis may be considered to confirm the following assumptions. First, the longer the period of time an L2 learner spends in an L2 environment, and second, the closer his or her L1 stress system resembles the L2 stress pattern, the better this L2 learner will be able to acquire, and show good competence in, the stress system of his or her L2.

9 DISCUSSION POINTS

This final chapter contains some comments on the methodology underlying the discussions in this thesis, and on the research done to answer the research question. What went right and what could be improved in future research on this subject, i.e. the acquisition of stress by L2 learners?

9.1 The test

The test was done by each subject using pen and paper. The subjects took approximately 15 to 30 minutes to fill out survey and test. The moment the subjects received the test, was also the very first moment they came in touch with the nonsense words. This method, however, is not unproblematic. As I handed out and took in test forms, I noticed that a number of subjects experienced difficulty reading out loud the test items to themselves or did not take enough time to fully familiarize themselves with the nonsense words. It also happened on some occasions that I heard a subject read out a word, placing stress in a certain syllable but crossing another syllable on their forms. In these cases, I took the test again by having the subjects read out the items while I put crosses in the corresponding position. When I was to do this test again I would test every subject this way. I would also give subjects more time to be able to fully familiarize themselves with the test items, by for example letting them read the items to themselves 15-20 minutes before actually taking the test, so that they are able to read out each test item confidently. Subsequently, I would let the subjects read out the items to me and mark on a test form that syllable the subjects unconsciously stress.

9.2 The items

With hindsight, in preparing the list of nonsense words I could have included more words containing closed, heavy prefinal syllables. That way I would probably have more evidence to prove that these syllables attract main stress in English, for both L1 and L2 speakers. Also, some of the items I used seemed a bit too challenging for the subjects, and probably need a redesign in future tests.

9.3 The subjects

It seems more advisable to first ask subjects about their mother tongue before requesting them to participate in research. In my case I could then have taken more control over the size and amount of L2 learner groups; I could for example have created groups identical in size but with different mother tongues. Through examining such groups I might have gained more solid conclusions on the acquisition of the English stress pattern, and might have better detected possible L1 influence. Now, I had groups different in size and I excluded "single" subjects (i.e. subjects that were the only ones with a certain mother tongue among the L2 learner group) because I could not compare their results to other subjects having the same L1 (and excluding them did not influence the overall L2 learners' results significantly).

9.4 The theories used

Using Optimality Theory as to support the English stress pattern was challenging, since the only description of it as described by Michael Hammond proved to be poorly reflected. A number of changes could be made (partly due to email exchange with Wim Zonneveld) that considerably strengthened the theory, in which the most important one was to reposition the FTBIN constraint to the top of the constraint hierarchy. Also, because at the moment there is hardly any phonological information on Sylheti Bengali, it was difficult to trace L1 influence in the results of the Sylheti subjects. An obvious way of avoiding this is to better research the L1 languages of the L2 speakers in advance to finding and testing these L2 learners. That way, also the test could be designed in such a way that acquisition of the English pattern especially can be shown, by for example creating test items that are predicted to have contrasting results by the two stress patterns from the L1 and the L2 involved.

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APPENDIX I Survey

Research to L2 Acquisition -- Word Stress Pattern of English
Thank you for willing to participate in my little language research project! Please answer the following questions truthfully before doing the actual test. There are no 'right' or 'wrong' answers; all answers in the survey as well as in the test are used to do research about second language acquisition. Participation in the research is entirely anonymous. For questions about this survey or the test, feel free to contact Reiniere Aimée Blokhuis (reiniere.aimee@gmail.com or catch me walking around).

Short Survey

I am: _____ years old and male / female *(please delete as appropriate)*

1. Since when have you lived in an English-speaking country?

2. How old were you when you started to use/speak English?

3. Which language (or languages) do you consider to be your first language/mother tongue?

4. Which language (or languages) did your parents speak at home when you were little?

5. Which language (or languages) do you currently speak at your home in Britain?

6. How many hours a week do you watch English spoken television programmes, listen to English spoken radio or use English approximately?

7. How many hours a week do you watch television and listen to radio in your own mother tongue, or use your own mother tongue approximately?

8. Which language is *overall* the main language you use in current daily life?

APPENDIX II Word Stress Test

This test is about so-called "word stress" in English. English is a stress language, which means that each English word has a part of it, a syllable, which is pronounced with more "prominence" or more "emphasis" than the other syllables in that word. Stress can be in different places in different words. An example is the word family: it has three syllables of which the first syllable is pronounced with the largest emphasis: **fa**-mi-ly (you can try this out for yourself!). Another example is the word *computer* (com-**pu**-ter), and yet another one is *jubilee* (ju-bi-**lee**).

In the following test you'll find a list of words, consisting of 2, 3, 4 or 5 syllables. You will probably see immediately that they do not mean anything in English, but, on the other hand, they could be new words: there was also a time when a new word like *Unicef* was entered into the language, and now all speakers of English know that it has stress in its first syllable: **U**-ni-cef.

Your task in the test will be this:
For every "new" word, please indicate the syllable in which you think the main stress or emphasis would be, if these words *would be* real English words.

Please note that you do not need to worry whether your answers are 'right' or 'wrong': these words do not exist (yet) in English. This test is just to gain insight in the "intuitions" of different second language speakers of English. Therefore, try to follow your intuitions. Just put stress on that syllable where you think it might go, would the nonsense word be pronounced by a native speaker of English. Some words (maybe many!) may strike you as a little strange, so it is normal that you need a little time to decide how they should be pronounced. Try not to think too long, though, often it's just one or two possibilities per word that sound most "natural" and those are the ones you choose from.

Here's how to get started:

3. Read the word out softly for yourself (so that no one else can hear you). Try to decide which syllable a native speaker of English would stress.
4. Mark that syllable on this sheet of paper by putting a cross in one of the boxes above the syllable that should be stressed, as can be seen in the example.

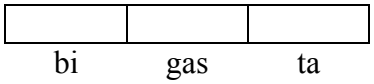
Example:

0. Computer

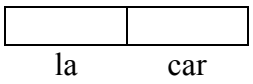
	X	
com	pu	ter

Please note:
Each word can only receive one stressed syllable!
Please do not assign more than one X per item. Enjoy the test!

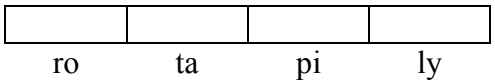
1. bigasta



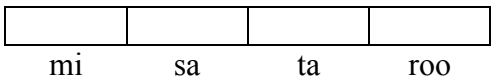
2. lacar



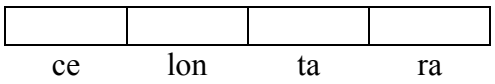
3. rotapily



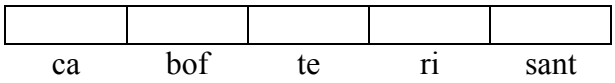
4. misataroo



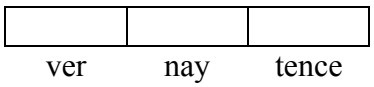
5. celontara



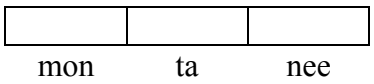
6. cabofterisant



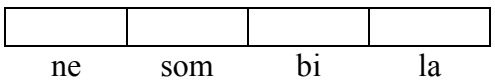
7. vernaytence



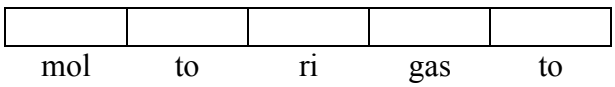
8. montanee



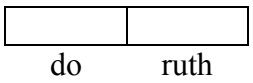
9. nesombila



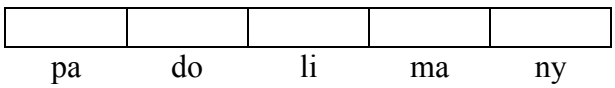
10. moltorigasto



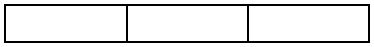
11. doruth



12. padolimany

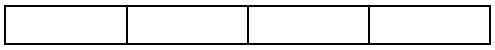


13. perido



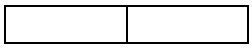
pe ri do

14. rafaleena



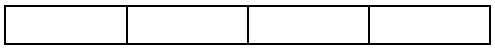
ra fa lee na

15. renay



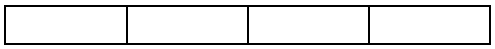
re nay

16. morgarity



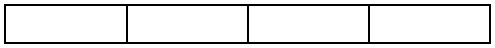
mor ga ri ty

17. losifantor



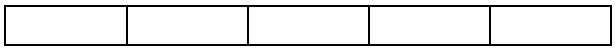
lo si fan tor

18. cafilagont



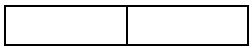
ca fi la gont

19. canarontifa



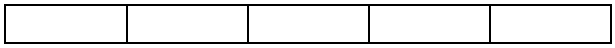
ca na ron ti fa

20. lacad



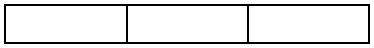
la cad

21. rigadasiter



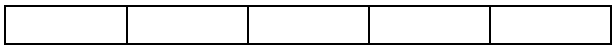
ri ga da si ter

22. cabarant



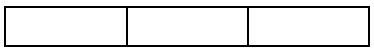
ca ba rant

23. nacasbuntera



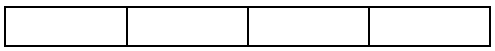
na cas bun te ra

24. centadi



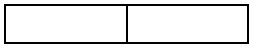
cen ta di

25. perdentifa

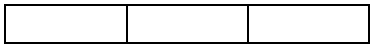


per den ti fa

26. reyno



27. codina



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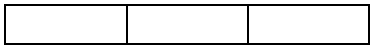
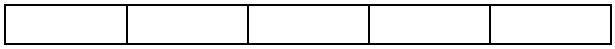


29. filantomarist



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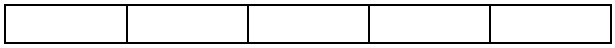

31. pertiny